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THREE SUCCESSFUL CASES OF CEREBRAL SURGERY.

INCLUDING (1) THE REMOVAL OF A LARGE INTRACRANIAL FIBROMA; (2) EXSECTION OF DAMAGED BRAIN TISSUE; AND (3) EXSECTION OF THE CEREBRAL CENTRE FOR THE LEFT HAND;

WITH REMARKS ON THE GENERAL TECHNIQUE OF SUCH OPERATIONS.[1]

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Case I. *Large tumor in the cerebrum probably arising from an injury at three years of age; epilepsy and hemiplegia at twenty-three; tumor removed at twenty-seven; hernia cerebri; recovery; probable cure of epilepsy.* —Sent to me in May, 1887, by Dr. M. L. Davis, of Lancaster, Pa., with the following history.

"T. D., aged twenty-six, carriage-maker, married at twenty-three, has one child in good health; father died at twenty-seven from an injury to the spine; mother and maternal grandmother (aged eighty-three) living and in good health; the other three grandparents died at fifty-seven, seventy and sixty, the last of consumption.

"At the age of three he fell out of a window, a distance of several feet, striking his head upon some bricks. His mother says there was no cut, but his forehead was indented. He lay motionless for a long time as if he were dead, and remained comatose for an hour. His head became swollen and blue. Dr. John L. Atlee saw him the next morning and, as the child was moderately bright, thought he was merely stunned, as there was no evidence of injury except the swelling. The recovery from the injury was slow but apparently complete. The indentation was on the front part of the head, but the mother does not remember clearly on which side. The patient says his mother told him it was on the left side.

[1] Read before the American Surgical Association September 18, 1888.

"At five years of age a discharge from the right ear followed an attack of measles. This discharge has continued at intervals ever since, and has impaired his hearing. It is at times offensive, although accompanied by but slight pain. In August, 1886, the left ear became partially deaf. During his boyhood he was considered dull, was very forgetful and impulsive though not quarrelsome; he complained considerably of headache; no history of syphilis can be obtained and there is no visible manifestation of it after the most careful examination. His general health was good, excepting the frontal headaches, which were moderately severe. In the autumn of 1884, he became ill with neuralgic pains and was "all broken up." These symptoms gradually increased until February, 1885, when he was seized with violent epileptic attacks followed by intense pain in the head which lasted several days. These fits occurred once or twice a week, and the attacks of pain in the head increased in violence and duration. By the end of April the right arm became paralyzed, and the right leg, and the right side of the face, in the order named, the paralysis making gradual progress.

"My first visit was made on June 8, 1885. While hitching my horse, I heard him screaming with neuralgic pain. The pain was located on the left side of the head, and started about the supraörbital ridge, darting back to the occiput, but was more intense at the middle of the left side of the head. Inspection disclosed a small scar at this point. Pressure increased the pain. The entire right side of the face was paralyzed; both motion and sensation being affected, though motion had suffered more than sensation. The right pupil was largely dilated and did not respond to light; the left one was normal and responsive. The sight of the left eye was good, but whether perfect or not I could not determine. The vision of the right eye is imperfect; aphasia is a prominent symptom. He made marked efforts to converse, but could not; the pulse was 60 and irregular; respiration 16; tongue heavily coated; obstinate constipation; anorexia; insomnia; no fever.

"*Diagnosis.*—Pressure upon the anterior lobe of the left hemisphere involving the third convolution, extending backward, from exostosis, tumor or possibly only thickening of the dura mater; syphilis excluded.

"*Treatment.*—Iodide of potassium and arsenic with laxatives.

"The pain began to diminish and at the end of three weeks he was nearly free. Arsenic was suspended by July 1, 1885. Paralysis began to improve in the leg and in the arm. Aphasia was the last to improve, so that when he had regained the use of the leg and arm and could come to my office (a mile distant), he would bring pencil and paper and write any questions he desired to ask. The questions were, however, much mixed. About this time his eyesight began to fail until August, 1885, when he became totally blind, first in the right eye and later in the left. At the end of two months his left eye gradually improved so that he could again walk in the streets. The right eye remained blind for several months, when suddenly the sight returned in it, remained for a few hours and left as quickly as it came. This phenomenon has since occurred frequently, not only in the right eye but also in the left. He was annoyed, also, very much by flashes of light and mist before the eyes, accompanied by vertigo and constipation.

"The epileptic fits continued with diminished violence and frequency until November, 1886, since which time he has been exempt. His urine has been frequently examined, but there was found neither albumin,

casts nor sugar. In the fall of 1886 he was at Jefferson Hospital, but returned after three weeks. His mental condition has been considerably affected; his judgment is not good; memory fair; general mental powers slow; at times peevish and fretful."

May 30, 1887. Present condition. Headaches moderately severe, generally lasting from half an hour to several hours, and occurring from two or three in a week to one in several weeks. His speech is hesitating and slow and he has a feeling as of being dazed. He is very anxious to have an operation done if it holds out the slightest possible chance of relief. When he has spasms "hot air seems to rise from the stomach to the nose;" the eyes become dim and twitch toward the right followed quickly by the head, which is turned in the same direction. During this time he is mostly conscious and feels as if smothered; unconsciousness soon follows. As soon as the "hot air" is felt the right hand closes tightly, the forefinger first then the thumb. He cannot tell whether the wrist, shoulder, and elbow are flexed in succession. The face also is affected (whether one side or both he does not know) and turns to the left, so that it seems "as if he were going to be turned entirely round to the left." These attacks last from five to ten minutes. Sometimes he has minor attacks with the same symptoms moderated without loss of consciousness. He has a good movement of the bowels every day; appetite ravenous; for four or five weeks has had night sweats almost every night, especially on the legs; has lost flesh since March 1st; his usual weight is 135 pounds, present weight 122 pounds. The gait would not now show any paralysis; his hand squeeze is about equal; the leg-thrust of equal force, as judged by resistance to my hand; the face is not paralyzed; the right ear has a slight discharge, but is the better hearing ear of the two; his deafness for conversation, however, is only moderate; the right pupil is slightly larger than the left. The right eye deviates slightly upward and outward. An examination of the head shows a small scar a quarter of an inch long, three and three-quarters inches above the middle of the zygoma and one and five-eighths of an inch in front of the bi-auricular line. The skull feels slightly irregular as if the bone had been injured; no marked depression; not now tender or painful, nor is there any sensation located at this point preceding the fits. The urine is rather highly colored and slightly clouded, the specific gravity 1023, no albumin, no sugar, a few crystals of uric acid; normal mucus.

June 7, 1887. While in the hospital he had six fits to-day. Dr. Moylan saw the fourth from the beginning. The eyes were staring, with the whites turned up, the eyelids moved rapidly up and down; the right pupil was larger than the left; the head was turned far to the right and the mouth drawn in the same direction; the four limbs were flexed throughout. He was lying on the left side, with the feet turned to the left, and rigid. This condition soon passed into marked convulsive efforts. The attack lasted two minutes. The face was normal in color at first but soon became very blue. There was no frothing at the mouth. A few days later Dr. Charles A. Oliver saw him in the convulsive stage of an attack which was described as follows, together with a careful ophthalmic examination:

"At the request of Dr. Keen I examined T. D., and obtained the following results:[1] The pupil of the right eye was four by five mm. in

[1] This merely constitutes a *résumé* of sufficient fulness to render the case complete, reserving the discussion in extenso (in connection with other cases observed with Dr. Keen) for a separate communication.

size upon exposure to broad, diffuse daylight, whilst the pupil of the left eye was three by four mm. in size upon the same exposure. Both irides responded separately to light stimulus and accommodation, the right pupil becoming larger in all directions after a second's continuance of stimulation to what it had been brought by the first impulse of light. The right iris was slightly the more sluggish, each responding only when the stimulus was placed in small areas to the right of the eyes. The test for accommodation, which was made by approximating the finger and having the patient steadily gaze at it, taking care to keep it at the point of greatest visual acuity in the visual fields, showed that the irides were exceedingly sluggish. Both corneæ were seemingly equally sensitive, and a difference of six-tenths of a degree F. in the temperatures of the two lower culs-de-sac could be differentiated. (Right = 97.7° F., and Left = 97.1° F.) In a state of rest, fixation was accomplished with the left eye, the right being turned up and out. Careful examination showed that this condition was caused by a paresis of the right internus coexistent with paresis of the left inferior and superior recti; all of the other attached external and internal muscles being intact. In addition, there was a paresis of the inferior fibres of the orbicularis on both sides, more marked on the left; the left lower eyelid being partially raised by the corresponding face muscles. Vision with the right eye was reduced to the counting of fingers at six inches, about four degrees to the outside, whilst vision with the left eye, which was also eccentric, was reduced to the counting of fingers at thirteen inches, about six degrees to the inside. Fields of vision gave the following results: left-sided homonymous hemianopsia superadded to large central scotomata; leaving two irregularly contracted right-sided fields in which nothing but form could be discerned.

"The ophthalmoscope showed in each eye a few faint vitreous opacities —almost complete post-neuritic atrophy with greatly diminished retinal circulation (the arteries being reduced to mere threads), much more marked on the left side; both choroids woolly and granular; whilst in the right retina there was a small isolated brilliant cholesterin crystal. Both disks gave decided characteristic appearances of previous choking.

"Five days later the patient was seen in the convulsive stage of an epileptoid attack. He had been complaining of frontal headache, accompanied by 'bad taste,' followed by vomiting. When first seen there were a series of irregular clonic contractions, which were marked in both lower and upper extremities of the right side and trunk, the head being turned toward the right. The mouth was drawn away from the left side. The right eye was fixed toward the upper temporal side, whilst the left deviated almost directly inward. During this deviation a slight horizontal nystagmus developed itself, which, as the general clonicism grew less and less, rapidly diminished, the excursions becoming greater in length and less frequent in action, with a steadily increasing tendency to fall into the ordinary state of rest, until in four minutes from the time when first seen, the oscillations had ceased altogether. During the nystagmic action the axis of the right eye was directed up and out, and the globe gave a slight twist downward upon its return internal movement. At the time of the convulsive seizure the right pupil was dilated to six by seven mm. in size, whilst the left pupil was enlarged to but four by five mm.; each pupillary area preserved its original long axis. The lower lids drooped during the clonic state, whilst the upper lids became con-

tracted, giving the eyes a staring appearance. Throughout this time the skin of the lids and the conjunctival mucous membranes seemed to

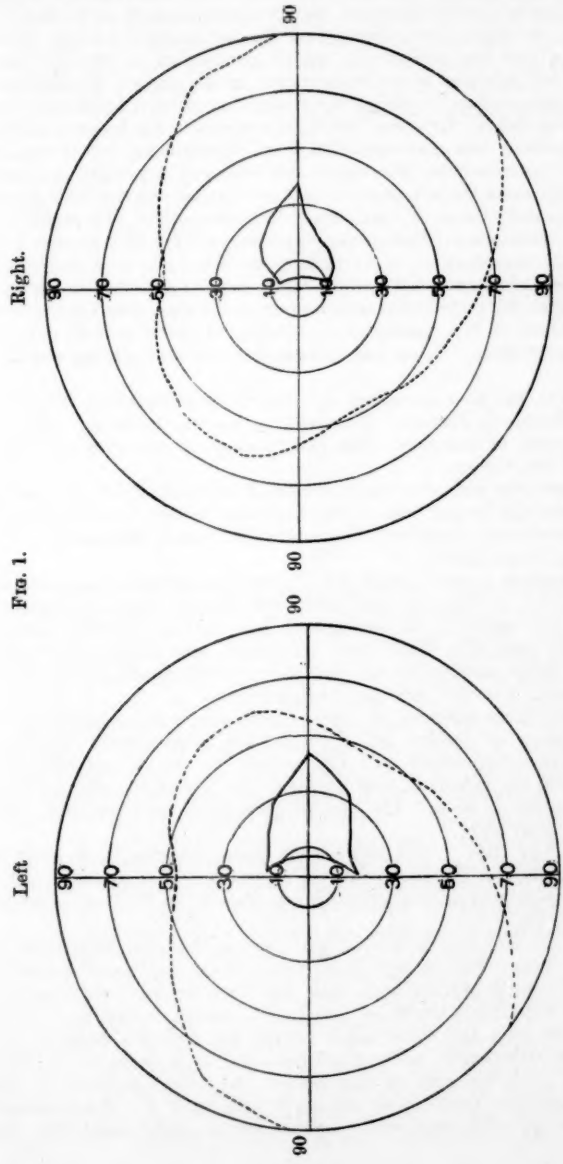


FIG. 1.

These fields were obtained with a McHardy perimeter in the ordinary way, except that the patient was made steadfastly to fix his eye upon the central point by means of a continuous noise (tapping with a pencil-tip upon the central white button, the act being rendered more sure by an assistant who continually watched that the eyeball was not moved. The surgeon's finger was carried in different directions along the perimeter arc, and when first recognized, the registry was taken.

be sensitive to touch and pain. It was now noticed that the patient profusely sweated upon both sides, and that there was equal thumping pulsation of the external carotids. At the moment of cessation of the nystagmic motion, and without the patient being spoken to, or aroused in any way, the right fissure closed and the left upper lid began gradually to fall over the eyeball, the pupil contracting to two by three mm. on the left side and three by four mm. on the right. At this time both irides were mobile to strong light stimulus thrown from the areas of the retained fields; the iris of the right eye giving the lesser reaction. Upon the patient being aroused (he, from appearances, never having entirely lost consciousness) the upper lids elevated, the right eye fixed to my position upon his left side, the left eye turned out and the pupils dilated to normal; the eyes, head, trunk and extremities still remaining in the same positions as during the convulsions. By still further concentrating the attention—*i. e.*, by talking to him in a loud and sharp tone of voice and causing him, at the same time, to gaze into the broad, diffuse daylight, his pupils contracted again to the sizes noted at the time of the cessation of the nystagmus, returning to their normal relative areas a moment later. Urine was examined at the time, giving negative results."

The patient was also examined by Drs. S. Weir Mitchell, Morris J. Lewis and George C. Harlan. The latter gives the following result of the examination of his ears. His examination of the eyes coincided with that of Dr. Oliver.

"A. D., partially deaf since early childhood after an attack of measles, still occasional discharge. H. = watch at four inches; lower posterior quadrant membrane destroyed, the remainder much thickened. The drum suppurating slightly.

"A. S., deafness came on suddenly (?) one year after a convulsion in 'consequence of a dose of medicine'; watch not heard on contact; tuning-fork not heard at all through air, but normal by bone conduction through mastoid. Membrane thickened and much contracted. Eustachian tubes apparently not patulous. Deafness evidently due to local changes, not to any cerebral complications."

For reasons given later under head of remarks, it was decided not to do any operation at present, but if, in the fall, after careful treatment under Dr. Davis, especially with the iodides, he should not be better and still desire an operation, that I should open his head. He returned home the middle of June. He had an epileptic fit on June 24th, July 26th and August 13th.

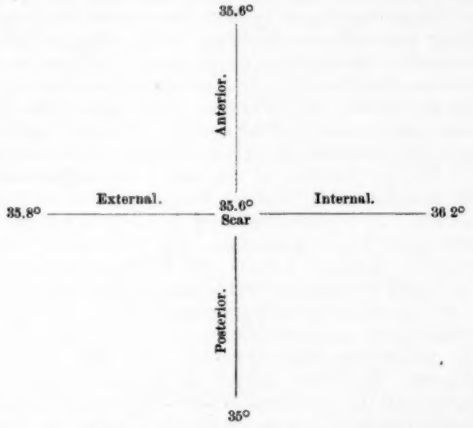
In the fall of 1887 I received several letters written by himself, as well as one from Dr. Davis, desiring an operation. The patient himself was quite urgent, and accordingly came to the city to St. Mary's Hospital in December.

Dec. 8, 1887. The scar finally settled upon as that resulting from his accident at three years of age (though his mother had stated his scalp was not cut), was a quarter inch long and half an inch above and in front of the superior stephanion, two and a quarter inches to the left of the middle line, and three inches behind the external angular process. It was now tender both to pressure and to a slight blow. The temperature over the scar on this side of the head was 95.5° F., and in a corresponding position on the right side 94.4° F. Sway antero-sinistral half an inch each way. Dynamometer, right hand 30°, and

left 35°. Knee-jerk, left, normal; right, subnormal. Reinforcements normal on both sides. Tactile sensibility in both hands normal.

14th. Temperature over the scar 95.5° F; right side, corresponding point, 95° F. Urine, specific gravity 1028, no albumin, no sugar.

15th. An attempt was made to see if the scar was the site of the highest temperature, and the result was as follows: the temperature (Centigrade) was taken over the scar and at four other points, two inches in front of and behind the scar, and two inches distant laterally.



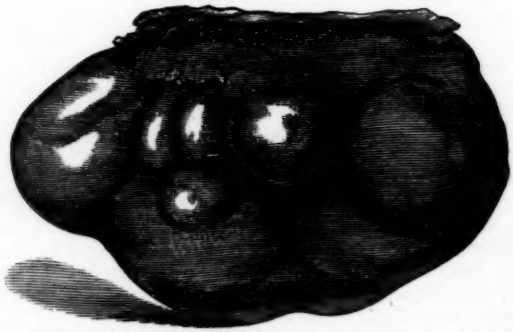
Preparation.—The following was the method of preparation for this and all the other operations here related: The room was uncarpeted, and contained only necessary furniture. The walls and ceiling were carefully wiped the day before, and all the wood-work and furniture, as well as the floor, were thoroughly scrubbed with carbolic solution. New, clean sponges were used that had been kept in carbolic solution, but were used with sublimate solution 1 : 1000 at the operation. In the first operation the instruments were all boiled for two hours, but in the subsequent operations this was omitted, but they were placed in a carbolic solution 1 : 20 for a half hour, then were transferred to boiled water that had cooled sufficiently to permit their being handled. In the first operation also, the spray of carbolic acid was used in the room all the morning of the operation, but not during the operation or at any of the redressings. At the later operations the spray was entirely omitted. The day before the operation the patient's head was shaved, then scrubbed with soap and water, then with ether and covered with a wet sublimate dressing of 1 : 1000, which was retained in its place by bandages until the operation began, when the ether and sublimate washings were repeated. The hands and nails were, of course, most carefully cleaned and disinfected by soap and water, alcohol and sublimate solution.

Operation at 1 P. M., December 15, 1887 Present, Drs. Grove, Mears, Roberts and the resident hospital staff, Drs. S. Weir Mitchell, Mills, White, Oliver and Taylor, and Messrs. Le Conte and Goodwin, medical students. Ether was used. An incision was first made through the scar down to the bone. By a gouge a little nick was then made in the bone so as

to fix the site of the scar. No scar was found on the bone when uncovered. This nick was extremely useful, as alluded to later. A large semi-elliptical flap was then cut three and a half inches across in both directions, the convexity posterior for drainage. The hemorrhage from the flap was very abundant and required twelve to fifteen hemostatic forceps, though eventually only four or five vessels required ligation. The bone, also, when bored bled freely. This ceased without treatment.

A one and a half inch trephine was then applied so as to include the site of the scar, the lower edge of the trephine just including the temporal ridge. In attempting to remove the button the dura was found to be adherent, especially to its lower half. Part of the bone was markedly thinned by the pressure of the tumor. When the button was removed the dura was found to be covered with a velvety outgrowth one-sixteenth of an inch in thickness. There was normal softness at the anterior portion, but most of the trephine hole disclosed a hard mass extending beyond its limits in all other directions. A second button was then removed directly posterior to the first. The dura under the latter was markedly protuberant but did not bulge, and the bone more eroded than was the first. A hypodermatic needle showed a deep mass which required considerable force to penetrate. The entire tumor was evidently not yet uncovered. Rongeur forceps were then used to enlarge the bony opening upward and downward until it measured two and a half inches transversely by three inches antero-posteriorly. The upper margin reached to within three-quarters of an inch of the middle line, when the border of the tumor was fully exposed. The bone at this part was greatly thickened. The lower border of the tumor dipped behind the squamous portion of the temporal bone, which was not thickened, but the tumor reached to half an inch below the edge of the bony opening, as was discovered later. On incising the dura one-quarter inch from the edge of the bone it was found to be adherent to the subjacent mass slightly at the margins, but increasingly so toward the site of the scar as a centre. I therefore severed its connection all round, and was able

FIG. 2.



Appearance of the tumor with dura attached. Natural size. (Drawn by Dr. John M. Taylor.)

now to enucleate the growth by the finger with but very little force, and lift it out from the underlying brain tissue and from the fossa behind the squamous portion of the temporal bone.

Description of the tumor.—Weight three ounces forty-nine grains. Displacement two and a half ounces of water. Size two and seven-eighths by two and a half inches and one and three-quarters inches in thickness; seven and a quarter and six inches in circumference in the two axes. Its long axis lay nearly at right angles with the median line.

Appearance.—Non-adherent to brain tissue; intimately united with the dura; dura and pia especially thickened under the scar, but gradually grew less and less adherent as the distance from the scar increased. In the region of the scar the dura was covered with a velvety fibrous growth. The tumor was very firm to the touch and very dense in texture; nodular on its surface. On cross section and at right angles with the long axis very firm; color pinkish-white; showing divisions into pyramidal compartments, converging toward a centre near the outer surface. Corresponding to the scar was a moderate depression on the surface of the tumor. The two disks of bone which were removed were very much and irregularly thinned, corresponding to the irregularities on the surface of the tumor.

FIG. 3.

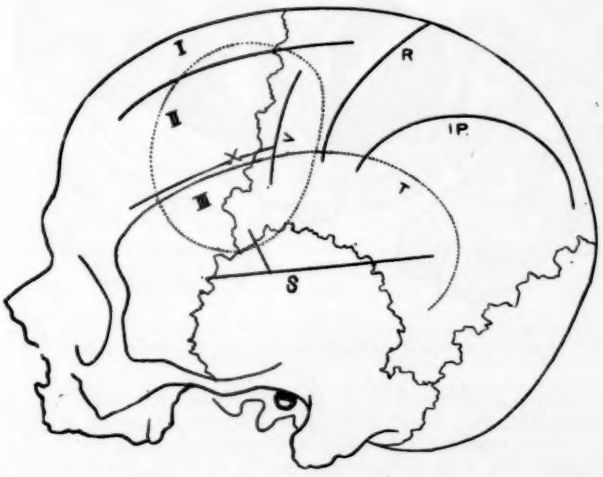


Diagram of the skull showing the site of the tumor.

S, Fissure of Sylvius. R, Fissure of Rolando. IP, Intraparietal sulcus. V, Vertical or precentral sulcus. T, Temporal ridge. I, II, III, the first, second, and third frontal convolutions. The *oval dotted line* represents the tumor, the cross (×) the site of the scar.

The situation of the tumor was afterward exactly determined thus: The first bone disk was accurately fitted to its corresponding irregularities on the tumor. The nick in this bone disk was at the site of the scar, and the position of this on the skull was one-half of an inch above and in front of the superior stephanion. By measuring from the nick to the edges of the tumor, anteriorly, posteriorly and transversely, and transferring these measurements to a skull from a point corresponding to the scar, its exact location was fixed. On this skull the chief fissures

of the brain were also marked. It was found (Fig. 3) that the tumor reached backward nearly to the fissure of Rolando, forward (two and a half inches) into the bases of the three frontal convolutions, especially the second and third, upward into the external part of the first frontal convolution and downward nearly to the fissure of Sylvius. Taking one of Dalton's sections and applying on it the measurements of the tumor, Fig. 4 shows the region involved in depth in the normal brain.[1]

FIG. 4.

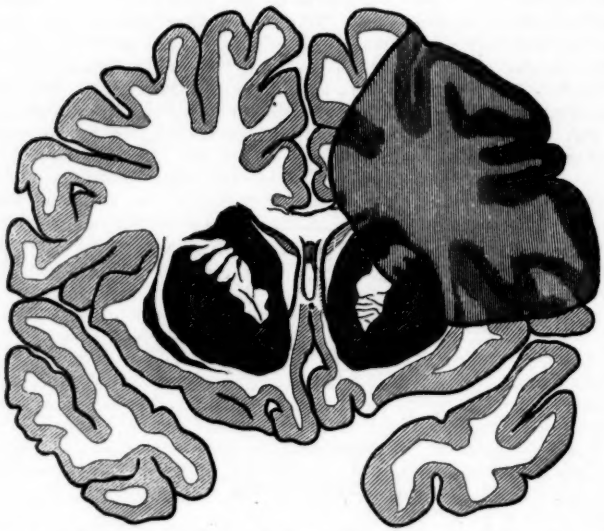


Diagram to show the depth of the tumor in Case I. The shaded part represents the tumor. The section is from "Dalton's Topog. Anat. of the Brain," Series C, Plate VI. (Drawn by Dr. S. C. Wood.)

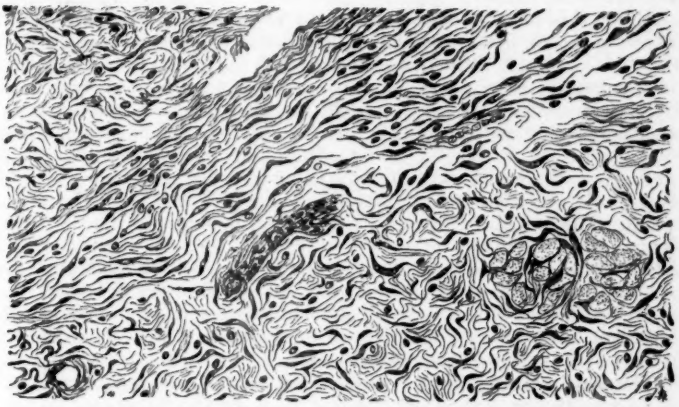
Drs. Allen J. Smith and F. X. Dercum kindly examined the tumor microscopically, and found it to be a fibroma "showing a tendency toward an arrangement in bundles of fibrous elements. To the right in the drawing (Fig. 5) is a transverse bundle of fibres having a peculiar translucent appearance as of some secondary degeneration." They deemed the tumor to be an old and not a recent growth.

No vessels required ligation in the dura, but several large veins of the brain poured out abundant streams of blood during and after enucleation of the tumor. I tied three or four of these with difficulty. Several times, in attempts to secure them, the ligature cut through, either from too tight tying, or tore the vessel completely by slightly unequal traction, either on one end or the other. Most careful gentle traction, evenly applied to the ends of the ligature, just sufficient to arrest the bleeding, answered best. The material used was Kocher catgut. The hemorrhage was still rather profuse. The wound was therefore douched with hot

[1] By an error of my own this is a trifle too deep.

water (115° to 120° F.), and direct pressure by sponges was tried. The bleeding was thus finally controlled.

FIG. 5.



Microscopical appearance of the tumor in section. (Drawn by Dr. Allen J. Smith.)

The bottom of the cavity occupied by the tumor was softened, and in part shreddy, white brain tissue; the margins of the cavity, where disclosed, showed apparently healthy brain convolutions covered by the pia with large dilated and tortuous veins. During the time occupied by controlling the hemorrhage, the cavity left by the tumor had been filled up nearly one-half by the resilient brain tissue. Rubber fenestrated drains were introduced at two points in the posterior border of the wound. A bundle of horse-hairs was then carried from one opening to the other across the wound. I had intended, if possible, to replace the buttons of bone as well as the small fragments that had been kept in a bowl of carbolized solution (1 : 40) which was placed in a basin of water maintained at a temperature of 100° to 105°, but the sacrifice of the dura prevented this step. The scalp wound was next united, and a small sponge, with a larger one over it, was placed upon the flap so as to depress it and to some extent obliterate the cavity with a view to prevent hemorrhage, and facilitate union with the flap. A thick dressing of sublimate gauze, rubber dam and muslin bandage completed the dressing.

The operation lasted nearly two hours. Most of this time was required for trephining and checking the hemorrhage. The patient bore the shock and large loss of blood very well. No motor symptoms occurred during the operation. When placed in bed he rolled persistently to the left side and drew both legs up. He vomited four times between 3 and 9 P.M.; probably this was the cause of some slight oozing next noted.

Dec. 15, 9 P.M. Perfectly conscious; called me by name. Aphasia somewhat marked. If pricked by a pin in fastening the bandage, he always said, "the grasshopper picketh." The pupils were equal and

rather dilated; no paralysis; slight pain. Morphia was given as needed, and small doses of lime water and milk given every two hours. As the dressing was saturated with blood, it, as well as his night shirt, was changed. He sat up in bed voluntarily and thrust both arms through the sleeves of the shirt.

From this date for a week the temperature varied from only a little above to a little below 100° F. The catheter was required for only one day. He suffered little or no pain and was hungry. The dressing had to be changed twice a day for two days, as it was saturated with blood or bloody serum. But his aphasia increased markedly and the flap became much rounded upward. By the third day the large clot, which had formed in the wound cavity, disintegrated; part escaped by the drainage tubes, and part, with some shreddy cerebral tissue, by pressure and gentle washing out by sublimate solution followed by cooled, boiled water. The amount of the clot I estimated at four ounces, thus exceeding by one and a half ounces the volume of the tumor. The aphasia diminished almost immediately. One tube was removed on the fourth day. Four of the eleven sutures were removed on the fifth day, and three more by the seventh, nearly all of the wound having united by first intention. His mental condition was continuously clear. No anæsthesia when tested by the æsthesiometer.

The next week was full of peril. His temperature rapidly rose, till, on the tenth day, it reached 104.2° F., but by the fourteenth day was down to the normal. All but two sutures were out by the eighth day, and the second drainage tube shortened to one inch, and all the horsehairs out but two. But on the eighth day his aphasia, which had nearly disappeared, began to increase again; his right lower face was less mobile, and the catheter was again required. Marked and increasing bulging of the flap was seen, and on the ninth day, without sensory disturbance, his right arm was noticeably paretic, the left showing no change. The dressings were saturated with a watery discharge, but no pus. The second drainage tube was out. By the tenth day the face and arm were distinctly paralyzed; speech very thick, and later unintelligible; aphasia marked; deafness increased. Mind clear throughout. The following day the right leg was paralyzed. Along with the high fever and other symptoms, apparently due to pressure, he had a sharp diarrhœa, with very fetid stools. His bowels had not been moved till a week after the operation in spite of enemata and mild laxatives.

Fearing an accumulation of pus as the cause of all the danger, I reopened the wound with my finger to over half its extent. This disclosed a mass of tissue somewhat discolored, swollen, soft and friable, not very vascular, resembling white brain tissue. The microscope showed no pus, but only fatty and granular cells and *débris*. The sublimate dressings were continued. The diarrhœa was met with opium and acetate of lead and bismuth. His liquid diet had not been changed, but all food was now sterilized. Quinine (10 grains) and moderate doses of brandy were also given.

By the end of the second week the diarrhœa and fever were gone, aphasia and deafness diminishing, and the flap was adherent to the brain tissue, which had now formed a slight hernia cerebri through the crescentic opening. He was so much better that some oysters were given and greatly enjoyed. During the third week his temperature varied but little from the normal. The right leg improved very much, the

arm and face remaining paralyzed till the end of the week, when the face first began to regain its mobility. The aphasia lessened also. The hernia cerebri had increased considerably. Soon granulations sprang up all over its surface, and a small amount of distinct pus was discharged daily. The dressings had to be changed daily, chiefly on account of a limpid fluid which escaped in abundance from two pin-hole openings in the hernia cerebri. This was not glairy, and in appearance resembled cerebro-spinal fluid. This abundant, limpid discharge only ceased at the end of the fifth week.

In the fourth week another sharp rise of temperature took place for two days, up to 102.6° F., and with it a marked purulent discharge from the right ear and constipation. The attack yielded to liquid diet, laxatives and antipyrin, with washing out the ear. His aphasia was now nearly gone, and the facial palsy considerably lessened. On the twenty-seventh day he moved his right arm once at the shoulder only, but could not repeat the movement; on the twenty-eighth he could bend his elbow, the finger movements being barely perceptible. The right nails (as shown by staining with nitric acid) had grown decidedly less than the left. He was hungry and was sitting up.

In the fifth week the temperature twice rose quickly for two days, and one day to 102.4° and 102° F. respectively, apparently due to constipation, for an enema caused a quick decline. With each of these attacks of fever his aphasia and the palsy of the right arm immediately increased, and as quickly bettered with the fall. By the end of this week the extent of motion at the shoulder and elbow was complete, though much feebler than normal, but flexion of the fingers was only perceptible. By the fortieth day the finger flexion had increased to the normal in extent, but only to about half strength; he could extend the fingers slightly, but could not repeat the extension, though he could the flexion. At the wrist he had flexion, but not extension. On the forty-second day he could extend the wrist, and from this time on he steadily gained in extent and power of motion in all directions.

The temperature now fluctuated but little from the normal till he left for home. The hernia cerebri had been strictly let alone, only the sublimate dressings being changed, at first daily, on account chiefly of the watery discharge until the thirty-seventh day, after which time they were only changed every two to three days, the watery discharge having then ceased. The hernia was covered with granulations, but, as they showed very little tendency to cicatrize, on the thirty-fourth to the fiftieth day thirty-four skin-grafts from his arm were used to hasten the process. Of these, all but four adhered; several that became detached during the dressing were immediately reapplied and lived. The potassio-tartrate of iron was used for some days with advantage under the sublimate dressing, and removed a membranous film which existed between the grafts. On the seventy-first day cicatrization was complete. The hernia had been for some days nearly on a level with the skull. The next dressing was on the seventy-fifth day, when the site of the hernia, instead of being an elevation, had suddenly changed to a deep hollow.

March 8 (eighty-fourth day). Went home well. Nails on the right hand still half stained with nitric acid; on the left a barely perceptible band. Surface temperature, left side, one-half inch anterior to the old scar, 95.1° F.; right, corresponding point, 96.4° F. Dynamometer, R. 23°, L. 30°. While using the dynamometer the depressed scar rose to the

level of the skull; any marked expiratory effort or even leaning forward to the horizontal position has the same effect. Front tap marked on both sides. Knee-jerk: right much diminished, left exaggerated. Elbow-jerk: right side exaggerated, left diminished. The hernial scar is a crescent, mottled by the skin grafts, two and three-eighths inches long, seven-eighths of an inch wide and five-eighths of an inch deep. Mind clearer than before the operation.

April 19. Dr. Davis writes that he had an epileptic attack yesterday at breakfast. The attack was slight and came on slowly, the head and body turning to the right. Otherwise well and gaining flesh.

I owe much to the intelligent care and faithfulness of Dr. J. C. Heisler, the surgical interne, and he made most of the observations of the temperature, reflexes, etc. I must also express my obligations to Drs. Davis, Oliver, S. Weir Mitchell, M. J. Lewis, William J. Taylor and J. M. Taylor for help in many ways in all three cases reported.

I append Dr. Oliver's later observations of his eye symptoms. These, with observations from the other two cases, he will publish in extenso later.

"Immediately following the operation, and at stated intervals of two weeks' duration each, the eye-grounds were carefully reëxamined, the state of the muscles retested and the conjunctival sensibility retried, but in no instance could any changes be found. Of intense interest, however, were other changes. Two months after the operation the fields of vision, although retaining the same positions and embracing the same areas, were found to have gained partial color definition. The left field[1] showed distinct and well-mapped areas for yellow and blue, with a small spot in which red was designated as 'lead,' whilst the right field gave a trace of color differentiation in a small central area. On the same date, the point of best sight with the left eye—even according to the patient's account—had gradually increased to qualitative vision; letters of number thirty dioptry type being properly named when swept across the situation of the best projection in the eccentric field. With the right eye nothing definite could be determined, the patient constantly twisting his head in various positions and suddenly exclaiming, from time to time, 'I see a black mark,' or incorrectly calling an exposed letter.

"Careful study of these symptoms, in association with the history, shows that there were most probably two distinct factors in their production: First. An irritative cortical and subcortical growth occupying a position in the left motor zone, encroaching upon, and, in fact, altering the centres for the right upper and lower extremities, the centres for lateral movements of the head and eyes to the right with elevation of the eyelids and dilatation of the pupils and the centre for elevation of the right angle of the mouth; beside indirectly pressing upon and perhaps changing the left visual and auditory centres or their efferent strands[2] Second. A resultant destructive basilar lesion including portions of both second nerves posterior to the chiasm, parts of both third nerves, filaments of the sensory and motor branches[3] of both fifth nerves

[1] In writing to me before the operation the patient, referring to his eyesight, by a curious error called this the "left *land*."—W. W. K.

[2] It is probable that the right visual and auditory centres or outgoing strands were in some way impinged upon, possibly by the brain mass itself.

[3] The motor involvement of this nerve is, of course, questionable, if the lesion or its indirect results are supposed to have gained access to the nuclei of the motor oculi.

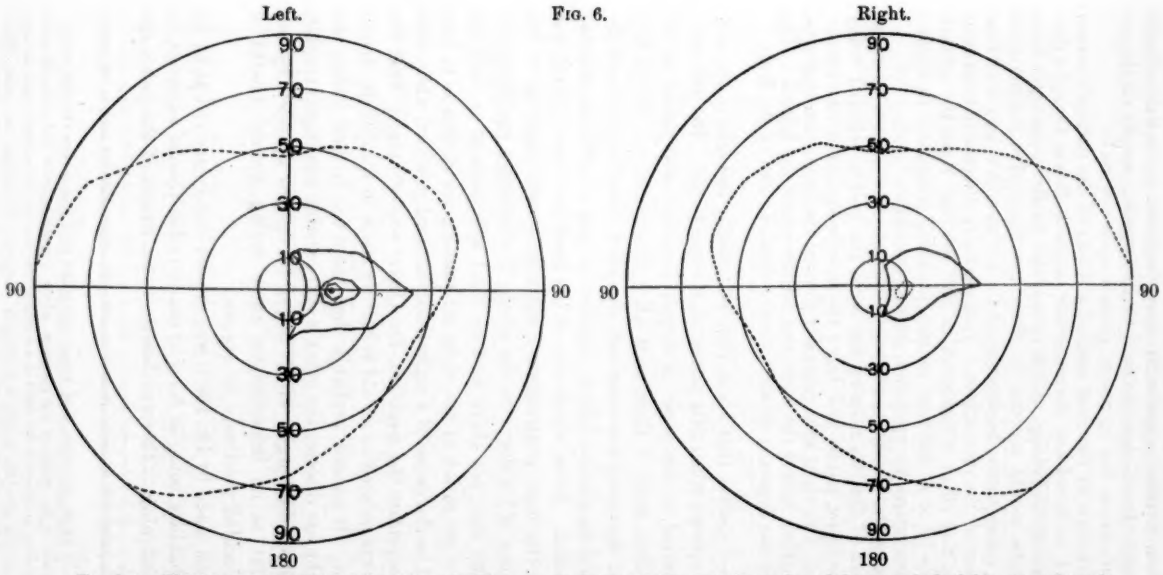


FIG. 6.

Here four millimetre squares of white, yellow, blue, red and green were fastened in turn upon the carriage of the arc and wheeled in consecutive order into the areas of recognition. In the left eye, white gave the largest area inside of the original form field, followed by yellow and blue that occupied smaller, though seemingly similar, spaces. Red, which was termed "lead color," gave the smallest field, and was designated as "blue" throughout the blue field, before reaching its own area. Green was never recognized, being called "yellow" inside of the yellow field. No scotomata could be obtained throughout all of the areas. The field of the right eye showed a small area just inside of a very doubtful blind spot, in which yellow, red and green were termed "bluish" or "blue;" blue being properly designated in these positions.

and both eighth nerves,[1] apparently more profound upon the left side during the acute attack upon account of the passing results of the co-existent irritant lesion, but in reality greater upon the right.[2]

"At first, although by the most careful scrutiny of the patient's person there could not be found any characteristic sequelæ, it was thought that an old gummatous thickening, with a subsequent basilar meningitis from acquired syphilis, would account for these two distinctive characters of lesion, and, in consequence, he was placed for a reasonable length of time upon large doses of the alteratives. This partially diagnostic treatment not producing any effect whatsoever in five months' time, the growth was decided to be of a different nature, probably traumatic in origin; and, after consultation, an operation seemed justifiable."

For two weeks Dr. Heisler made careful comparative observations on the temperature of the two sides of the body, the points selected being the axillæ, the brow, palms and legs; the results appear in the accompanying tables. The right side generally showed the lower temperatures, except in the palms, where the right was, on the whole, the higher. The temperature of the legs was about 1° lower than the rest of the body.

Remarks.—I confess that I was very reluctantly brought to the conclusion not to operate when this patient first came to me. But the early history, as detailed in this paper, is largely corrected and pieced out by facts learned later, some of them even after the operation. When first seen, the site of the injury was extremely doubtful. Shaving the head disclosed scars, and the clinical history reported no scar of sufficient moment to be remembered. Even which side of the head had been injured was doubtful, and the most contradictory statements were made as to the initial symptoms of his fits. On the whole, the evidence was mostly in favor of the left side, but there were no local symptoms at or near the scar; the old suppuration of the right ear raised great doubts as to how far that might be the cause of a right-sided cerebral mischief, while, still further to complicate the problem, Dr. Oliver was of opinion that the ocular symptoms pointed to an old syphilitic lesion in spite of the denial of the patient. It seemed probable that there was a dual lesion, one the result of the ear disease, the other a still existing meningeal trouble, causing irritative discharges, which might be lighted up anew by any operation. But as no improvement came during several months of treatment, I decided, positively, to operate.

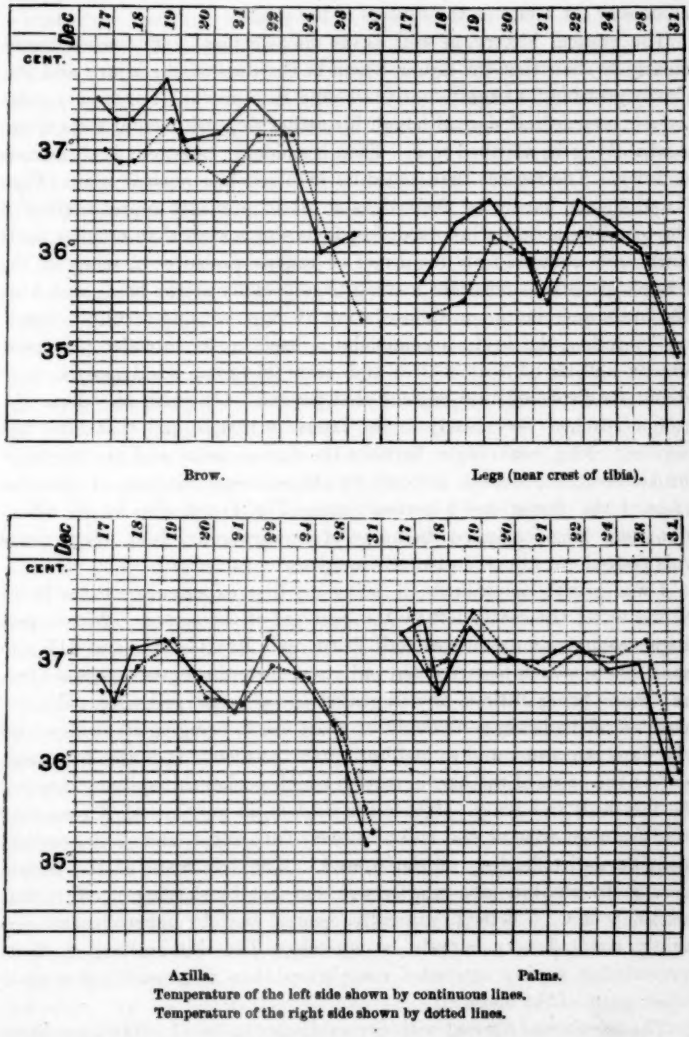
The diagnosis made by Dr. Davis was the one finally arrived at by all of us, the probability being in favor of tumor rather than of exostosis, or cicatricial thickening. This was based on the extent of the palsy, the

[1] A peripheral complication in the acute attack of catarrh of the right middle ear, early in life, should be remembered.

[2] These conclusions, which, of course, must remain sub judice until post-mortem evidence, are rendered still more certain by the results of the operation, where it seems probable that a long-standing, quiet and slowly growing neoplasm at last reached a sufficient size not only to encroach upon the adjacent motor zones and thus give rise, in part, to convulsive discharges, but to cause an actual inflammatory attack, during which symptoms of both irritation and destruction showed themselves; the former gradually lessening and the latter persisting.

face, arm and leg being all involved, with aphasia; but I did not at all anticipate, nor do I think any of my colleagues did, that the tumor had

FIG. 7.



Temperature of the left side shown by continuous lines.
Temperature of the right side shown by dotted lines.

attained such enormous size. It is not surprising that so large a mass caused epilepsy, aphasia, complete hemiplegia, intense neuralgia, deaf-

ness in the left ear and blindness; but the wonder was that, excepting the ear and the eye symptoms, all the others had passed away except a slowness of speech and the epilepsy, and even this was much better. No function was absolutely destroyed, nor was there any external change in the bones or the sutures of the skull.

The clinical history, as well as the microscopical examination, seems clearly to show that the tumor began at the time of the injury and was slowly growing for twenty-four years until its removal. For twenty years it gave no material sign, although his rather sluggish mental state is undoubtedly to be ascribed to it. Then it suddenly burst out in disastrous activity. The regions that would be involved in a normal brain (Figs. 3 and 4) can hardly be deemed as at all an accurate representation of the localities actually involved, for, 1, its size is such that remoter parts must have suffered from the direct or remote pressure; 2, many of the sequels are due to resultant meningitis, especially at the base; and 3, as the brain and the tumor almost began life together and certainly "grew up" together, the brain accommodated itself to its intruder to a great extent, and its cortical centres and even the great basal ganglia were doubtless displaced into regions that we can only guess at. That the tumor reached very nearly to the lateral ventricle, and that later the resilient rising brain-layer between the tumor cavity and the ventricle broke down, is probable, not only by the sectional diagram of the relations of the tumor and a normal brain (Fig. 4) but also by the abundant and long-continued discharge of cerebro-spinal fluid. Sometimes this poured out almost in two distinct jets.

I was greatly astonished—it being my first experience—at the rapid filling up of the cavity left by the removal of the tumor. Within perhaps twenty minutes it was half filled up. In Cases II. and III. the same phenomenon occurred but only to a moderate extent, as was natural, there being little if any increased intracranial pressure. This expansion of the brain is no doubt of great use in bringing its surface and the flaps in contact and so facilitating their union. It is also to a great extent the cause of the hernia cerebri which pushes through any opening in the skull and scalp. Hence the wisdom, in most cases, of removing the drainage tube at the end of twenty-four hours, and of the earliest possible entire healing of the wound. The treatment of the hernia cerebri by absolute non-interference and not by shaving it off, is that which is now, I believe, generally deemed best by surgeons, and certainly resulted very happily in my case. The skin-grafting upon its granulating surface succeeded even better than it generally does upon other parts of the body.

The hernia was dressed with dry sublimate gauze (1 : 1000) for about ten weeks, yet no ill effects resulted. The first serious rise of temperature could not be attributed to the mercurial, for the wound up to that

time was a mere linear one and had nearly healed. I greatly regretted that I re-opened the wound, thus allowing the hernia to follow and causing such long delay in the healing. Looking back upon the entire history, it is evident that the fetid diarrhœa was the cause of the high temperature and was itself, probably, the result of the prior obstinate constipation. It seemed more probable and reasonable, however, at the time to attribute the diarrhœa, the bulging of the flap, the aphasia and the progressive hemiplegia to intracranial pressure; and concealed suppuration was the most likely cause for such pressure. But when he had several later attacks of fever with diarrhœa or constipation, the aphasia and paralysis again fluctuated in a curious and instructive way, more with the general condition, and especially with the fever, than with any possible alteration in the intracranial conditions.

A careful study of the surface temperature of the head was made, as is seen by the notes. The only inferences seem to be that, before the operation, the left side had about the normal greater heat than the right; but it is a rather curious fact that while this was true even of the brow, the right cornea was 0.6° F. hotter than the left. Three months after the operation, too, it is noticeable that the right side of the head was 0.7° F. hotter than the left—a rather curious fact, though Broca gives the right parietal temperature as 1.35° F. higher than the left. The other comparative temperatures are placed at the end of the history.

Dr. Heisler made daily examinations of the urine for some weeks, but, except that it became scanty and high colored during the febrile attacks, there were no other changes.

He also made very numerous examinations of the patellar, abdominal and cremasteric reflexes. Two days after the operation they were all normal but the knee-jerk was not reinforcible. The later observations vary extremely and seem to follow no law. Sometimes the right side was greater than the left, sometimes it was reversed, and in different reflexes it was not always the same side that preponderated at the same time. Sometimes one reflex would be normal or increased, while another would be diminished; sometimes all would vary similarly. There was apparently no relation between the variations of the reflexes and the fever or other physical factor. Before the operation the left knee-jerk was normal; right subnormal. Six days after it, the left was exaggerated, the right much diminished; while in the elbow-jerk the reverse was then found. We had no instrument by which to measure the knee-jerk, and I do not rely, therefore, implicitly on these observations, except that they certainly show a curious variability, seemingly without any law. In its histological structure the tumor is very rare. Only 3 fibromata appear in the 580 intracranial tumors tabulated by Bernhardt and Hale White. It is equally gratifying in the entirely favorable prognosis.

CASE II. *Simple depressed fracture of skull, followed in four months by epilepsy; thirteen months later trephining and removal of damaged brain tissue; recovery in seven days; cure of epilepsy to date.*—D. B. L., of Kansas City, was sent to me April 8, 1888, by Dr. W. C. Roller, of Hollidaysburg. Aged twenty-five; best weight one hundred and fifty-four pounds, present weight one hundred and fifty-two and a half pounds; five feet eleven inches in height; American; civil engineer. Had the ordinary diseases of childhood, except scarlet fever, from all of which he recovered perfectly.

At seventeen, in the summer, while in the engineer corps of a railroad, walking fast to catch a train, he felt dizzy and his head commenced to pain him. He was in bed for a week and in the house for ten days. The headache was not well located. So far as he remembers his headaches were of equal severity both before and after this, occurring from one or two in a month to one in two months. He always could predict them by a twitching of the eyes and by waves as of heated air passing before either the right or left eye. From seventeen to twenty-two he was in school, and since 1885 has been a civil engineer, in the office in winter and in the field in summer.

In November, 1886, he fell one night a distance of nine feet. His face was scratched and he had a serious blow on the right side of the head, without, however, any lesion of the scalp. He was unconscious for a considerable time. When he came to, about daylight, he found himself in bed and entirely conscious. After dressing he came down stairs and took a car to his sister's, where he was confined to bed for three or four days. A week after the accident when he first tried to dress himself again, he noticed that the three left ulnar fingers had lost their feeling. He could move them but they felt strangely unnatural, especially toward the tips. He had some difficulty in buttoning his collar and in other such finger actions. There was no other paralysis, and no catheter was necessary.

The headaches after the accident were about as usual, possibly less severe. He returned to business in about a month.

March 8, 1887. At 9 A.M., while waiting for a street car, he suddenly felt dizzy; starting to walk he swayed to and fro; called a policeman, but before one reached him he fell down unconscious. He recovered in a few minutes, and found that his left hand and forearm were paralyzed. After the policeman had rubbed his hand and arm for a few minutes, he completely recovered the use of them. He is quite sure that his shoulder and elbow were not affected. Though he felt able to go to work he did not resume his place at the office until the following day.

In June, 1887, he had a dizzy spell, which was relieved by the application of hot water to the head.

In September, 1887, being unusually well after his summer holiday, he suddenly felt quite dizzy. Fearing an attack he ran the length of a long hall back to his office, and lay down on the floor and became unconscious. He woke up muddled after ten or fifteen minutes. A brother clerk states that "his eyes were first open and fixed, then his head was tossed from side to side, with considerable general convulsive movement, and later considerable rigidity of the body. He turned his body like a corkscrew, and especially kept his head down pounding on the floor with his forehead. His face and hands were dark blue, cold and damp. There was frothing at the mouth, and later some loss of

memory for some little time." The hands were not affected in any way, but both eyes were as "red as flannel" for three or four days. In an hour or two he returned to his work in the office. These attacks were always ushered in by palpitation of the heart and a rushing sound in the ears. After these attacks, of his own accord, he took bromide (about a drachm a day) until the 25th of February, when he stopped on account of the acne.

March 1, 1888. While walking in the street he felt a dizzy attack coming on. He walked perhaps seventy-five feet and became unconscious. After he recovered he walked home and remained in the house for some days, but not in bed. He was nervous, but otherwise well. His hand was not affected. He was generally constipated before these attacks.

21st. He knew that an attack was coming on by the dizzy feeling and the sensation of numbness which he could not locate; by gasping for breath and by wanting more light in the room. He became unconscious, but did not fall from his chair. The hand was not affected after it. His sister, who was present, states "that his convulsion began with slight movement from side to side, increasing in violence; the face was swollen; the eyes open wide and very red; twitching of the head and face; left forearm and leg stiffened; no convulsive movement, except a little twitching of the left fingers; breathing was snoring and there was frothing at the mouth. He was unconscious for ten minutes. This attack was followed by temporary loss of memory, confused talking, etc." Later on, in the same day, another attack was aborted by the use of cold water on his head, which was very hot.

April 8. Present condition: Urine normal; no albumen, no sugar.

Head.—When his head was shaved two small scars were found, one unaccounted for and one from an old hurt. In addition to this, five-eighths of an inch behind the apex of the right parietal protuberance and on a level with it was a shallow groove running upward and forward at an angle of 50 degrees with the median line, the angle opening posteriorly. The groove was about two and a half inches long and one-half of an inch in width. The ends were not definitely marked; the centre was three inches to the right of the middle line. The anterior end of the groove died out just in front of the bi-auricular line and just anterior to the fissure of Rolando.

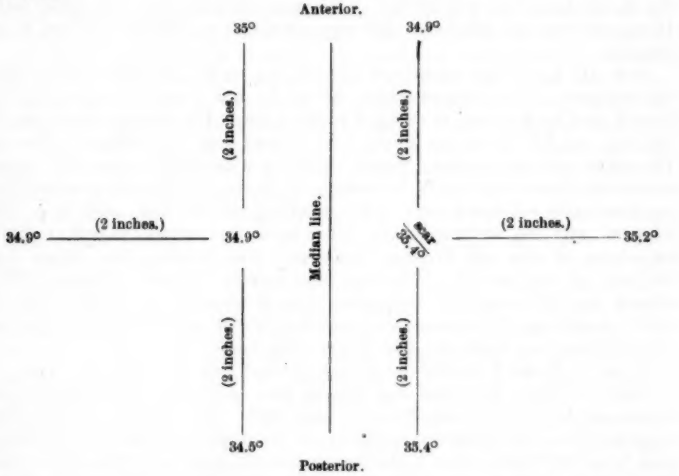
The anterior portion of the groove slightly overlaps the pre-Rolandic convolution, crosses all of the post-Rolandic convolution, and the posterior portion of it is over the supra-marginal. The scalp showed no lesion.

Dr. J. M. Taylor determined the following facts: "Knee-jerk and reinforcement normal. Dynamometer: right, 160°; left, 150°. Sensation in hands by the æsthesiometer, normal and equal. Station, sway one-half of an inch posteriorly, and then three-quarters of an inch forward; to right one-half of an inch; then left one inch. Electric reaction by a faradic current, normal."

Dr. Charles A. Oliver examined the eyes and made the following observations: "Direct vision for form, normal in each eye separately. Range and power of accommodation in each eye, proper for refractive error and age of patient. Fields of vision for form and color, normal in area and sequence. No evidence of subnormal color-perception. Pupils equal in size and shape upon separate and conjoined examination. Irides freely mobile to light-stimulus, accommodation and convergence.

Iris of right eye not so responsive as its fellow to light-stimulus in *monocular* action; there being a difference of one and a half millimetres in the size of the two pupils after the utmost action in myosis. No changes in the eye-grounds except those found in used hypermetropic eyes at patient's time of life. No perceptible anisometropia. Slight and almost imperceptible insufficiency of the interni."

The temperatures were also taken by Dr. Taylor over the scar and two inches in front, behind and externally, and at the three corresponding points on the left side, with a centigrade surface thermometer as follows:



Diagnosis.—Traumatic epilepsy from depressed fracture of the skull, with probably a fragment of bone broken from the inner table; possibly a cyst of the brain; certainly, secondary traumatic changes. Centre for the left hand and the supramarginal gyrus involved.

I recommended that an operation should be done, and he gladly consented to it.

Operation, April 12, 1888.—Present: Drs. W. J. Taylor, Mills, Sinkler, Lloyd, J. W. White and Morris J. Lewis, of Phila., C. M. Ellis, of Elkton, Md., and Mr. Le Conte, medical student.

I had intended giving the patient a quarter of a grain of morphia to contract the cerebral vessels, as Horsley has advised, but he informed me of the bad effects of that drug upon him, so I substituted one drachm of the fluid extract of ergot half an hour before the operation.

The previous day his head had been shaved and treated as described in Case I. Similar precautions were taken as to hands, instruments, sponges, etc. No spray was used.

Ether was administered and a horseshoe-shaped incision, three by three and one-quarter inches, was made, extending beyond the limits of the depression, with the convexity backward. Hemorrhage from this wound was admirably controlled by the flat band furnished with the ordinary Esmarch bandage. Eventually only three arteries in the scalp

required ligation. The loss of blood from the scalp wound was not over half an ounce. As soon as the flap was raised a sharp furrow, about three-sixteenths of an inch in depth, was seen in the skull, showing evidently the old line of fracture through the entire thickness of the bone. This could not well be appreciated through the thick scalp. An inch and a half trephine was now applied directly at the middle of the depression.

FIG. 8.

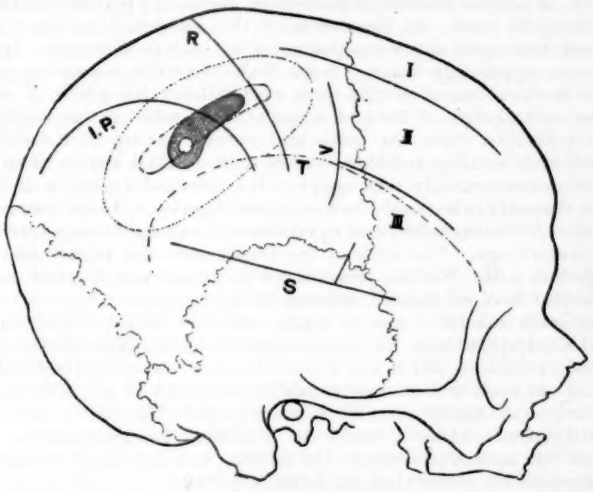


Diagram of skull.

S, Fissure of Sylvius. R, Fissure of Rolando. IP, Intraparietal sulcus. V, Vertical or precentral sulcus. T, Temporal ridge. I, II, III, The first, second, and third frontal convolutions. The *dotted* line represents the opening in the skull; the *interrupted oval* line, the furrow in the skull. The *shaded* portion represents the part excised; the *circle* representing the cyst. (Drawn by Dr. John M Taylor.)

Care was taken, on account of the inequality of the surface of the bone, not to cut through the elevated portions in advance of the depression of the furrow. As soon as the disk of bone was removed it was placed in a teacup, in a bichloride solution, 1 : 2000, which Dr. Lloyd was careful to keep at 105° F., by hot water in an outer basin. All the later fragments removed were put in this cup for future use, should it not be needful to remove the dura mater. The inner surface of the button showed a ridge corresponding to the old fracture. There was no bulging of the cranial contents, and they pulsated regularly. The dura mater in a line corresponding to the fracture was dark and thickened, and looked as though a large vein or sinus was under it.

A small opening was made in the dura, and, by means of a probe, it was found to be distinctly adherent to the brain, underneath and beyond the limits of the opening. Accordingly, by a rongeur forceps, the opening in the bone was enlarged three-quarters of an inch backward, to a point somewhat beyond the line of the old depression and half an inch anteriorly, until, finally, it measured three and one-quarter inches an-

tero-posteriorly and one and one-half inches transversely, and exposed all the adherent portion of the dura. An incision was now made in the dura mater, with the convexity backward, one-eighth of an inch from the margin of the opening in the skull, and the whole dura mater was detached from the brain, until the non-adherent portion was reached, both posteriorly and anteriorly. This lifting tore the brain substance to which the dura was intimately attached. The portion of the brain underneath the line of the scar was brownish-yellow for nearly a finger's breadth, of normal consistence anteriorly, but at the posterior extremity was distinctly hard. In the centre of this indurated portion a small cyst was discovered about one-quarter of an inch in diameter. Its contents were apparently serum. Some little hemorrhage from the vessels of the brain occurred at this time, when I tried the effect of cocaine applied on a pledget of borated cotton. This solution was made with recently distilled water, the bottle and its cork having been disinfected by bichloride solution and then washed with distilled water. The effect of cocaine was certainly very happy. It contracted a number of blood-vessels that otherwise would have required ligation. Three vessels were ligated with Kocher catgut and no further serious trouble was experienced from hemorrhage. The walls of the vessels were not friable and bore the ligation well. Neither pressure nor hot water was required and the vessels that were not ligated were controlled by cocaine.

The brain substance was so matted together in the line of the scar that it was impossible to distinguish one convolution from another. All the brain substance which was altered in color, including the thickened walls of the cyst, was excised to about one-third of an inch in depth anteriorly and nearly two-thirds posteriorly. The entire amount of brain substance excised would be, perhaps, one teaspoonful. The incision was made vertically to the surface and but little hemorrhage accompanied the removal of the brain substance.

At the time of the excision of the brain tissue Dr. Morris J. Lewis observed the following phenomena, which were all corroborated. How many were due to the act of cutting I leave to the reader to decide: "Patient yawned twice contracting the face evenly (previous to yawn the creases in face were slightly more marked on *right* side). Opened eyes and rolled them slowly; slight external strabismus of both eyes; pupils moderately dilated and equal. *No* conjugate deviation.

"During the whole of the cutting there were no movements observed in the left arm or hand, but once or twice conscious movements were made with the right arm and both legs, the right leg moving the most strongly.

"A tonic contraction, lasting but a short time, was noticed in *left* leg (a similar contraction in thumb, in palm and flexion of wrist occurred in left arm during etherization and before operation).

"After the cutting, and while the patient was still under ether, the following condition of the reflexes in the legs was noticed:

"*Right* knee-jerk exaggerated; *left* knee-jerk about normal. *Right* ankle-jerk marked; *left* ankle-jerk very slight. A tendency to clonus (one or two throbs) was observed in right foot, none in left."

I had taken my camera and two Cramer plates, No. 28, and at this stage of the proceedings Dr. Morris J. Lewis, at my request, took two photographs of the wound, the exposure in each one being ten seconds. This was the only interruption in the operative proceedings. The day

was cloudy and the light poor and the patient moved slightly, so that the first photograph was worthless, but the second is fairly good.

I then removed the already nearly detached dura mater corresponding to the entire length of the scar. On its inner surface a small spicule of bone, size one-quarter inch, was discovered. It was attached to the under surface by one end. It was imbedded in the brain substance, but whether it had any relation to the cyst could not now be ascertained, though it most probably had. The button of bone which had been removed was now completely perforated at its middle by the centre pin of the trephine and another hole was made toward its margin. It was then placed on the under surface of the flap and secured in place by a chromic acid catgut ligature, the two ends being passed through the openings in the bone and then through the scalp and tied on the outside to prevent its falling upon the brain substance, and to secure its adhesion to the scalp.

The scalp wound was now united by chromic catgut ligatures placed quite closely together. A rubber drainage tube was brought out of the posterior part of the wound and about a dozen strands of horsehair were passed entirely through the wound. An ample bichloride dressing was now applied to the entire skull.

Twice during the operation his respiration and circulation had been poor and a number of injections of brandy were made in the forearm. He was placed in bed surrounded by hot bottles. The operation lasted one and a half hours and his temperature, at the close of it, was 97° and the pulse 102.

April 12, 6 P. M. As the dressing was saturated with blood the wound was redressed. The left hand was distinctly paralyzed, as follows: The fingers and wrist cannot be flexed. Any attempt at flexion results in extension of both fingers and wrist and separation of the fingers. 9 P. M. Temperature 98.4° F., pulse 98. Had a very comfortable sleep; suffering no pain; vomited only once.

13th, 8.15 A. M. (first day after operation). Temperature 99° F. He passed a quiet night on the whole. Being hungry, I ordered him to have coffee and rolls for breakfast and milk every two hours. At 11.55 last night the nurse tested his hand and found no power of flexion. At midnight he repeated the experiment voluntarily and found flexion in both wrist and fingers. I examined him, however, and found this flexion is effected by the superficial and deep flexors only, which flex the last two phalanges, but the knuckle-joints, which are flexed by the interossei, cannot be flexed. He makes a fist by flexing the last two phalanges and rolling the flexed fingers into the palm (as in ulnar palsy). He can, however, touch his fingers with his thumb. When he desires to clench the fist tightly he flexes the fingers as described, and then the flexors are put further on the stretch by extending the wrist. As the dressing was saturated with bloody serum and a little blood, it was changed.

13th, 6 P M. Temperature 99.8° F., pulse 88. The rise in his temperature was probably accounted for by some worriment due to his mother's absence, who was a stranger in the city. He has only two complaints to make, one that his right arm is very sore from the brandy injected during the operation, and the other that he is hungry. I directed a more liberal allowance of milk to be given to him with some bread and butter or toast. The dressing was a little moist, just saturated on the

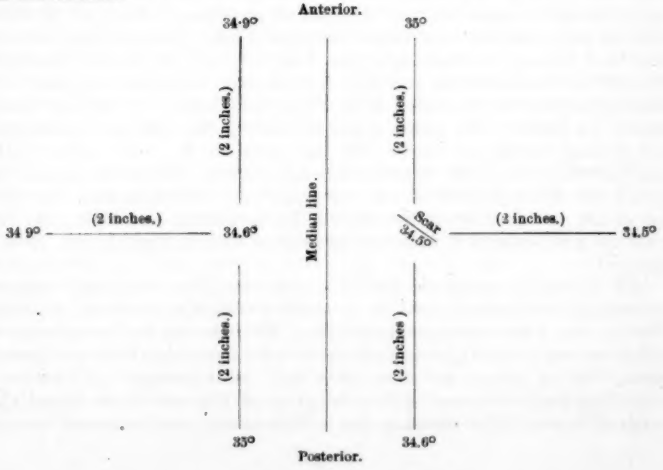
outside with bloody serum only, and was changed. The wound could not look better. The drainage tube was removed leaving the horsehair *in situ*. There was no material bulging of the flap.

14th 8 A. M. (second day). Temperature 98.4° F., pulse 86. 6 P. M. Temperature 98.4° F., perfectly comfortable; has had no pain; feels only a little sore; the right arm more comfortable; knee-jerk about normal, both yesterday and to-day, on the left side; slightly exaggerated on the right; no ankle clonus. By the æsthesiometer on the right fore and little fingers two points were appreciated as one at one-sixteenth of an inch; on the similar fingers on the left side at six-sixteenths of an inch.

15th (third day). Had a comfortable night; temperature normal. As he was hungry I allowed him to take two chops this morning. The only complaint was that it was not enough. During a dream in the night he disarranged the dressing (though the wound was not uncovered), so that I redressed the wound. I removed the horsehairs one by one. There was no discharge and the wound was completely healed, excepting a very small area at the drainage opening. The temperature at noon, by a surface thermometer for five minutes was, in the left hand, 35.4° (C.); right hand, 35.5°; left forehead, 36.7°; right forehead, 36°; left leg, 35°; right leg, 34.9°. (Dr. Wm. J. Taylor.)

19th (seventh day). The wound was dressed and all the sutures removed. As the suture holding the disk of bone in place was causing no irritation, it was left. The wound was perfectly healed, not reddened, no soreness. The flap is concave to just about the same extent that it was before the operation.

On the *17th* (five days after the operation) he was up and dressed. To-day he has taken a walk of one-third of a mile. The only difficulty I have is in restraining him from reading, writing and, in general, too great physical and mental exercise. He is on an ordinary diet. In his left hand he has regained sufficient power to make his grip painful to me. When he wishes to grasp with any force, however, he still increases the power of the flexors by extension of the wrist, thus putting the flexors on the stretch.



23d (eleventh day). The suture holding the disk of bone in place was removed. No irritation at its two openings of exit through the scalp.

24th. Photograph taken. His mother being ill, he goes home to-morrow. Dr. W. J. Taylor made the following observations on his temperature (Centigrade).

Dr. J. M. Taylor made the following report:

"Dynamometer: right 160°, left 90°.

"Motion. Left index finger closes indifferently well.

"Sensation. Slight impairment in middle forearm and third and fourth fingers, but position of æsthesiometer clearly indicated.

"Knee-jerk: right increased, left normal; reinforcements to normal.

"Station, normal, antero-sinistral; antero-posteriorly, forward three-quarters of an inch and not backward; laterally, right half an inch, left one and a half inches.

"Muscles respond to the mildest faradic currents equally well on both sides. An accident made it impossible to test them for reactions of degeneration."

May 23. The patient called at my office to-day. The site of the operation shows a furrow. The replaced button of bone is perceptible and firmly adherent to the scalp. It is not adherent on the sides of the opening. This is well shown when he bends forward, as the button can be moved by pressure. The scalp is in good condition and protects the opening well. He has no headaches or mental symptoms, except that now and then he fears an epileptic attack, and this worries him. He eats and sleeps well. He makes a fist firmly, with primary flexion of the knuckles; his grip is good, and he has lost entirely the "dead-like" feeling in the three ulnar fingers. When he raises his left hand, and especially if he grips something with it, the left forefinger twitches noticeably.

Dr. Oliver reports the following reëxamination of the eye, twenty-four hours after operation.

"Iris of right eye responds *separately*, as equally and as freely as its fellow, the pupil becoming the same size as that of the left side upon extreme contraction, to light stimulus.

"The isolated symptom of want of proper reaction of the right iris to light stimulus alone (a species of monocular Argyll-Robertson pupil), which was relieved by the operation, consisting in the excision of a portion of the cortex and subcortical tissue in the right supra-marginal convolution, is, as far as the observer is aware, a new observation, and may be of value in further determining and better localizing the situation of interruptions in the light reflex act." In Dr. Oliver's paper later details will be given of the ocular conditions.

Dr. George Dock kindly examined the brain tissue removed, and reports as follows:

"The specimens consist of a piece of dura mater of irregular outline, measuring 4 cm. in length and 2.5 cm. in width, and a part of cortex cerebri of similar outline, down to, and including the white matter.

"The dura is divided into two unequal parts by a curved line in the long axis. This line is marked by loose connective tissue on the outer surface, resembling the course of a meningeal vessel. Near one end a small, smooth spicule of bone is adherent to the membrane. On the inner surface the line is well marked, though only as a thickening and pigmentation of the membrane. The dura varies in thickness

from 5 mm. to 2 mm. It is deeply pigmented, especially on its inner surface. Microscopic examination shows fibroid thickening, especially on the inner surface, corresponding to the line supposed to represent a cicatrix. There is also extensive perivascular and interstitial hemorrhage, and hemorrhage into the arachnoid spaces.

"The piece of brain substance measures 3.3 cm. in length, 2 cm. in width and 1.3 cm. in greatest thickness. The surface is rough and discolored, and shows no normal cortical surface. The edges and inner surface show a few punctate spots, but appear healthy. The small cavity on the surface looks like the site of a cyst, which has been obliterated by the hardening.

"Microscopic examination of specimens from various parts of the surface show extensive destruction of brain tissue. The brownish tags on the surface are composed of broken-down nervous tissue with pigment masses and compound granule cells. Deeper down are perivascular hemorrhages and collections of lymphoid cells, fine granular pigment, compound granule cells and increased number of neuroglia cells. The edges and inner or white matter surface show usually no change. Only at one end are there hemorrhages and collections of small cells in the perivascular spaces, at the margin of gray and white matter. A section from the wall of the cavity mentioned shows no traces of cyst wall proper. The gray matter there shows also vascular dilatation, compound granule cells and slight degeneration of nervous tissue.

"*Diagnosis.* The specimens evidently show results of a chronic meningo-encephalitis, which, in the absence of any discoverable vascular disease, is most probably of traumatic origin. The scar-like alteration of the dura strengthens this opinion, as does also the spicule of bone."

Remarks.—It was clear from the outset that this patient had suffered from a simple depressed fracture of the skull, and the operation showed that the dura had been torn and a spicule of bone driven through this rent into the brain. The brain substance also had been lacerated, and later a cyst had been formed. The degenerative changes in the brain were very evident to the eye, and the hardening of the cyst walls equally so to the finger. The conclusion is clear. This patient should have been trephined *immediately after the accident*, especially as, with due antiseptic precautions, trephining is not now a dangerous operation. In fact, the patient was lucky to have escaped an acute meningo-encephalitis. Whether the surgeon recognized the fracture or not, I do not know, but the patient, a very quick, bright and intelligent fellow, made one curious observation upon himself that I commend to the profession as it may prove a useful means of diagnosis in other cases. On the morning after the accident he examined the two sides of his head by tapping on it, and he says he observed distinctly a "cracked-pot sound" on the side of the injury. Whether this would be perceptible only subjectively by the patient, or whether the surgeon himself could also perceive it, is a question I have not yet had an opportunity to settle. If not heard by the unassisted ear of the surgeon, I would suggest that

a stethoscope be used while the head is tapped. "Skull percussion" may hereafter render important aid, especially in fissured fractures.

The location of the injury was clearly mapped out as over the hand-centre in the post-Rolandic convolution and over the supra-marginal convolution. The early clinical history indicated the involvement of the hand-centre, and the results of the operation were strikingly confirmatory. The very early return of the hand movements was probably due to the fact that "compensation" had already been effected soon after his accident, and that spoiled, and not normal brain tissue, was removed. The injury of the supra-marginal convolution and subsequent removal of the degenerated tissue would seem to have some causal connection with the "monocular Argyll-Robertson pupil" symptom, noted by Dr. Oliver, and may prove of value in the future.

Normally the left side of the head shows a somewhat higher surface temperature than the right. It is interesting to note that in this case the injured (right) side before the operation was distinctly the hotter of the two, and that only twelve days after the operation its temperature fell about 1° C., a point below the temperature of the left side—*i. e.*, its normal relation. It would seem that not only was there no inflammatory heat left as a remnant of the operation, but that the removal of the injured tissue had cut off the source of irritation and resulting heat.

Along with this it is to be noted that there has been no return at present (August 12th) of any fit. Though this period of immunity (four months) is too short to warrant any definite statement of results, yet, if we observe that before the operation the fits, though infrequent, were growing more frequent as time went on; that the fits have not since returned; and that the surface temperature of the right side has fallen to its normal relation to that of the left, it would give reasonable hope that the removal of pressure and of the diseased tissue, in which irritative changes were undoubtedly progressing, will result in a permanent cure.

ROTATION OF OVARIAN TUMORS;

ITS ETIOLOGY, PATHOLOGY, DIAGNOSIS AND TREATMENT.

By J. Knowsley Thornton, M.B., C.M.,

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The twisting of the ovarian pedicle, from axial rotation of the tumor, is of great interest to the pathologist, both as to its etiology and its results; and it is a sufficiently common accident to make it of even greater interest to the physician or general practitioner who is called upon to

differentiate its symptoms from those of other peritoneal diseases, and to relieve the great pain to which it commonly gives rise. It is, however, to the practical surgeon that all three must turn for their knowledge of the subject, and for the cure of the patients. My attention was early directed to the condition by a very unfortunate case, which I have recorded at length in the *Transactions of the Pathological Society of London*, and in a paper published in the *Medical Times and Gazette* more than ten years ago. The completion of six hundred cases of ovariotomy, among which I have met with no less than fifty-seven cases of twisted pedicle, seems to afford a fitting opportunity for giving to the profession the facts observed.

Rokitansky first drew attention to this subject by a very valuable paper on "Strangulation of Ovarian Tumors by Rotation," published in 1865. He described thirteen cases, eight of them met with in the *post-mortem* examinations made in fifty-eight cases of ovarian disease—a highly suggestive percentage, with regard to the mortality of the complication, when allowed to run its natural course. He had previously called attention to the subject as early as 1841, in the first volume of his *Handbook of Pathological Anatomy*. Sir Spencer Wells, in his second book on *Diseases of the Ovaries*, refers to Rokitansky's papers and gives some valuable records of his own experience, and in his more recent work on *Ovarian and Uterine Tumors*, page 60, he mentions two cases in which death took place before operation. He thus describes the results of rotation: "Congestion, exudation of serum, extravasation of blood and rupture follow in rapid succession," and again: "If the rotations are so complete and enduring as to strangulate the arteries, gangrene is inevitable." I shall have to refer to these passages again in my concluding remarks. He also points to the danger of intestinal obstruction as one of the possible results of twisted pedicle, and records a case of the removal of a dermoid tumor with twisted pedicle, during pregnancy, with a successful result. This tumor had been carried by the patient for eighteen years, and through several pregnancies, and was found at the operation, as in some of my cases to be hereafter recorded, entirely separated from its pedicle.

Kolb has recorded a case in which a fibroid tumor of the ovary, with twisted pedicle, caused obstruction of the intestines.

Peaslee, in his work on *Ovarian Tumors*, mentions cases in the practice of Van Buren and James Crane; Van Buren's cases were both fibroid tumors of the ovaries, and in one he operated with success. Crane's is a very typical case, the woman being seized with "agony of pain in the left iliac region" twenty-four hours after labor, and dying on the fifth day.

Patruban, so far back as 1855, recorded a case of rapidly fatal intracystic hemorrhage from rotation of an ovarian tumor.

Wiltshire has the honor of being the first operator who successfully removed a strangulated ovarian tumor in the acute stage of the accident; the symptoms came on four days before the operation, the twist was from right to left and the tumor of the right ovary. The patient recovered. Edwards, of Malta, published a case in *The Lancet* in 1861. The patient was known to have had a tumor during her first gestation. On the second day after her second labor, she was suddenly seized with violent pain, and died on the fourth day. At the autopsy, a tumor of the right side was found, with twisted pedicle; it was of a livid purple color, and there were patches of extravasated blood in its walls, which had given way; there was no peritonitis, and there were no adhesions.

Barnes records a case in the *St. Thomas's Hospital Reports*, 1870. The patient was prematurely confined, and died nine days later. At the autopsy, a dark-colored cyst was found, with a double axial rotation from right to left. He mentions a second case, in which the symptoms were mistaken for those of labor. Both were tumors of the right side.

Malins published a case in *The Lancet* for April, 1877; the twist was from within toward the left and over to the right, and had followed tapping. The tumor was presumably of the right ovary, but it is not distinctly stated so.

My own paper on "Three Cases Illustrating some of the Various Results of Rotation of Ovarian Tumors" was published in *The Medical Times and Gazette* of July 28, 1877. The three cases there detailed are the first three in the table which accompanies this paper. I then suggested "that the peristaltic action of the 'intestines may start the process,' and that the twist, once started, the pulsations through the cord thus formed 'would tend to increase it.'" I also said: "If the case is complicated with pregnancy, the fœtal movements may play 'an important part.'" We shall see how far the facts brought out by an examination of the numerous cases in my tables support my suggestions and those of others to which I am about to refer.

Veit, in 1878, mentions that Schröder had at that time met with thirteen cases of twisted pedicle, in ninety-four ovariotomies, a result very closely corresponding with my own experience, as will be seen by noting the numbers in the third, fourth and fifth hundreds, though the proportion in the first, second and sixth is much smaller.

Tait read a paper on the subject before the Obstetrical Society of London, in 1880, also founded on three cases, and an interesting discussion followed. He advanced the theory that the solid wedge of feces passing down the rectum was the cause of the rotation; but to support his theory, the tumors must all be on the right side, and my table shows that this is by no means the case. I think it is quite possible, however, that this may be one of the causes of rotation, and we shall see that an

observation made by Doran, when making a *post-mortem* in a case of my own which died from cancer of the rectum, while in the Samaritan Hospital with ovarian tumor, rather supports Tait's theory.

In the fourth edition of his work on *Diseases of the Ovaries*, Tait further discusses the subject at some length, and mentions that he had then operated upon nine cases with this complication. His attention was, like my own, originally called to the subject by an unfortunate case in which he operated for hernia; the patient died four or five days afterward, from gangrene of an ovarian cyst with twisted pedicle, and the autopsy made him doubt whether the symptoms all along had not been due to the ovarian trouble, rather than to the hernia.

Doran, in his work on *Tumors of the Ovary*, etc., devotes a whole chapter to "Twisting of the Pedicle." He thus describes the case already referred to: "a little artificial distention of the intestine caused it to press against the tumor so as to push its left side backward, stretching and twisting the pedicle." There was no twist in this pedicle, but he found vessels in it blocked with old clot, and it seems probable that the loading of the rectum caused by the cancerous stricture may have from time to time caused enough twist to set up clotting and changes in the vessels. He remarks: "Still I believe that, as a rule, the twisting of a pedicle is to be explained by the simpler doctrine that the tumor, pressed upon by the viscera and even the costal cartilages above, and by the pelvic structures below, but comparatively free laterally and anteriorly, rotates on its own axis every time that the patient, after walking or lying on her back, 'turns round and rests on her side.'" He sums up the results thus: "This complication may cause 'rupture or sloughing of the tumor, arrest of growth of the tumor through obstruction to the vessels of the pedicle, absolute atrophy of the tumor,' and, lastly, detachment of the tumor from the pedicle, and subsequent nourishment of its tissues through vascular adhesions." He figures a very interesting case of my own of complete detachment, Case 232, and on the next page gives another figure which exactly represents the condition I noted in Case 384, though it was not drawn from my specimen. Mr. Doran has kindly allowed me to reproduce these drawings.

Having thus briefly glanced at the literature of the subject, I will now proceed to a critical examination of the cases in my own tables, to see what actual facts they give us, and what probable explanations or more doubtful points they suggest.

The first fact is: that rotation is most common during the period of menstrual activity, two of the youngest patients being nineteen, and the majority between twenty and forty-five; it is, however, not by any means confined to this period, for no less than nine of my patients had reached or passed the age of fifty, and one was only thirteen and had never menstruated. A careful examination of my note-books also estab-

lishes the fact that the regularity and the amount of the catamenia are not usually affected, though there are a few marked exceptions, in which amenorrhœa or menorrhagia seems to have been induced. This rather surprises me, as I should have expected, especially in the chronic cases, that the irritation of the ovarian nerves would have made menorrhagia the rule, and I imagine that the loss of blood into the cyst must, by its compensatory action, prevent this in the majority of the cases.

It is natural to pass from the effect upon menstruation, to that brought about by the natural amenorrhœa of pregnancy. I have operated during pregnancy six times, and five of these cases had twisted pedicles; this shows a very close relation between the two conditions; and when we examine the column in the tables headed history, we find in it no fewer than nine other cases (or fourteen in all), in which the acute symptoms were associated with pregnancy or delivery, beginning commonly shortly after the latter, or after a miscarriage.

There are also four other cases in which the attack was associated with menstruation, or with its check by exposure to cold. Thus in eighteen cases out of fifty-seven, the circulatory phenomena associated with menstruation and pregnancy seem to be the active agents in producing the acute attacks. When we remember how very difficult it is to extract any facts from some patients, and how especially difficult it is to make them remember even the common time of their periods, much more to make them associate any special occurrence with the presence of menstruation, we may reasonably suppose that in many of the other cases the attack came during or in some connection with the period.

Accidents, direct violence, sudden strain and sudden change of position are the determining causes of the attack in eight cases; thus, we have walking downstairs, catching at a falling box, constant and violent coughing, sea-sickness, the administration of an enema, sponge tenting, falling over a hedge and straining at stool during severe constipation. Then, as in my first case, the tapping of the cyst seems to have precipitated the catastrophe in two other cases, and in two more it is a possible agent, though the history is imperfect.

There are only eight cases in which the patients did not have, or did not remember, a sudden attack of pain and more or less severe illness after it.

With regard to the influence of pregnancy, it is worthy of note that thirty-six of the fifty-seven patients were married women, a number out of proportion to that of the married and single cases in the whole six hundred ovariotomies.

It is obvious that the side on which the tumor grows has nothing to do with rotation, for there are in my tables twenty-eight cases of tumors of the right ovary and twenty-eight cases of tumors of the left ovary, and one in which both were involved.

No.	Age	Condition.	Side.	Condition of cyst or its contents.	Condition of pedicle	Adhesions.	History.	Result.	Number in ovariotomy Table.
1	28	Married	Right	*Vide* Trans. Path. Soc. 1876, vol. xxvii. p. 212.	.....	None.	Severe pain before birth of last child twenty-one months back; pregnant four and a half months; slow growth; tapped; acute inflammation of cyst and strangulation.	Died in fifteen hours	5
2	19	Single	Left	Full of blood.	Partial twist.	Extensive adhesions.	No acute symptoms. Has had five children since marriage.	Recovered.	16
3	24	Single	Right	Full of dark blood.	Completely obstructed.	Hardly any.	Excessive pain at the periods. Rapid growth, then slow	Recovered.	21
4	19	Single	Both	Suppurating.	Both completely obstructed.	Universal.	No useful history. Had been tapped.	Died.	26
5	30	Single	Right	Almost solid old clot.	Vessels quite blocked with old clot.	Universal.	Attack of pain, fever, in May, 1877; three months later I diagnosticated ovarian cyst; three months later it was so solid I doubted.	Recovered.	48
6	34	Married	Left	Coffee-ground material.	Vessels quite blocked with old clot.	Universal.	Sudden attack of pain, with constant vomiting, six months before operation. Anæmia followed, and cyst did not enlarge.	Recovered.	101
7	63	Married	Right	Dermoid.	Twisted off	Blood supply from intestinal adhesions	No useful history. I removed at the same time an ordinary tumor of the left ovary with a long pedicle.	Recovered.	102
8	42	Single	Left	Much clot in cyst.	Two turns and a half, but not obstructed completely.	Parietal and omental.	Sudden attack of abdominal pain, fever, etc., three weeks before operation.	Recovered.	130
9	19	Single	Right	Nothing special.	Partial twist; long pedicle.	Large blood supply through omentum.	Much abdominal pain for first five months after discovery of tumor; it then ceased; growth slow.	Recovered.	132
10	34	Married	Left	Much pus and lymph.	Twisted cord, size of goose quill.	Universal.	Sudden attack of inflammation of the bowels four months after last confinement, three years ago; ill ever since. Blood and matter on two occasions removed by tapping.	Recovered.	146
11	40	Single	Left	Wall friable, infiltrated with blood and full of clot.	Twist from left to right.	Universal recent lymph.	Sudden attack of "screwing pain" in left groin, three weeks before operation. While walking down stairs, faintness, cold perspiration, etc.	Recovered.	197
12	61	Married	Left	Dermoid ruptured and suppurating.	Hard cord.	Universal; peritoneum full of pus and contents of cyst.	Sudden attack of pain while stooping to catch a falling box. Five weeks before operation, vomiting, etc.	Died at once; shock.	200
13	54	Married	Left	Nothing special	Thin and long.	Chiefly on right side to omentum and parietes; firm and old	No useful history. Had been tapped once six months before operation; dark brown fluid.	Recovered.	216
14	33	Married	Left	Dermoid.	Twisted off.	False pedicle to omentum in right side of abdomen.	Was in the Samaritan Hospital with small tumor in left side, in May, 1874. Had children in that year, in 1876 and 1878, with no trouble with tumor; pregnant again in 1880, and in third month began to suffer from monthly attacks of pain, but got safely over her labor. Then with the return of the periods the pain became more severe, and she came into the hospital again, and I noted that the tumor had moved over to the right side of the abdomen.	Recovered.	232

15	31	Married	Right	Sarcomatous dermoid.	One turn and a half, but not obstructed.	No adhesions.	Rapid increase of size, with much pain, for four months. Dragging and burning in right side. Then the tumor gradually seemed to cease growing. Has had another child since the operation, and remains well.	Recovered.	242
16	28	Single	Right	Septic pus from tapping.	Like umbilical cord; not obstructed.	Extensive parietal and omental.	Five or six years ago used to have occasional pain in right side; increase of size was rapid a few months back, but lately has got rather smaller.	Recovered.	264
17	40	Married	Left	Showed that there had been repeated hemorrhage into cyst	Long, and not obstructed.	Several little false pedicles to omentum.	Severe attacks of pain after birth of last child, five years back. Has had five miscarriages, each being preceded by an attack of pain in left side.	Recovered	265
18	44	Married	Left	Much fresh blood.	Obstructed by hard clot.	Universal; recent.	Attack of violent pain three weeks after trouble with constipation.	Recovered.	287
19	41	Married	Right	Much old clot.	Not obstructed; cord-like.	Very extensive and firm.	Attack of severe pain in right side four and a half years ago, after confinement. Nine weeks back, after miscarriage, a still more severe attack and several slighter attacks since.	Recovered.	288
20	27	Single	Right	Ruptured dermoid.	Too much surrounded by adhesions for accurate examination.	Universal and firm.	Violent pain, vomiting and diarrhœa from chill, checking period in December, 1881.	Recovered.	289
21	33	Single	Left	Black and full of clot; some pus.	Only partially twisted; broad ligament infiltrated with blood.	General acute peritonitis; much blood free in peritoneum.	Taken suddenly ill on a Sunday. I saw her Wednesday late, and operated on Thursday morning. All signs of internal hemorrhage and peritonitis. Menstruation was just commencing when the attack began.	Died in forty-one hours.	291
22	43	Single	Right	Double dermoid.	Right pedicle twisted through.	Blood supply from adhesions to intestines, etc.	Troublesome cough in winter, 1878. Seemed to cause rapid increase of size. Tapped in 1879, and then began to have recurrent attacks of pain in right side. Steady decrease of size during the last six months.	Recovered.	297
23	50	Married	Left	Congestion and inflammation; changes due to twist.	Two turns; not obstructed.	No adhesions.	History imperfect.	Recovered.	329
24	13	Single	Right	Nothing special.	Thin and long, not obstructed.	Only omental.	No history of special troubles; had not menstruated. Two aunts and a cousin had also ovarian tumors.	Recovered.	332
25	33	Married	Right	Inflammatory changes	One turn; short.	Extensive false membranes, with large supply vessels.	Inflammatory attack after last confinement, followed by constant colored discharge for four years, and then six months amenorrhœa.	Recovered.	342
26	40	Married	Left	Dermoid.	Left twisted through.	Chief blood supply from omentum and intestines and also from adhesion to opposite ovary and tube.	Craniotomy performed eight years back because the tumor obstructed labor; four years later caught cold and "dreadful pain" in the tumor.	Recovered.	345
27	24	Married	Right	Brown fluid; vessels blocked with clot.	Completely obstructed.	Parietal, omental and intestinal.	When two months pregnant, was seized with violent pains like labor-pains in the right side; was ill nine weeks; then discovered a tumor in right side. Living seven months girl born fifty hours after operation. Had had one child before illness.	Recovered.	344
28	27	Married	Left	Dark tar-like fluid and fresh clot.	Not obstructed; looked like umbilical cord; large blue veins.	Omental and intestinal.	When three months pregnant, had sudden attack of violent pain in left side, at time when period would have come on but for her condition. This was a month before admission. Had had three children before. Went full time after the operation.	Recovered.	346

No.	Age	Condition.	Side.	Condition of cyst or its contents.	Condition of pedicle.	Adhesions.	History.	Result.	Number in ovariotomy Table.
29	43	Married	Right	Brown fluid, clot and pus; removed it entire.	Firmly twisted into cord.	Very extensive to parietes and omentum.	Pain after a miscarriage (she maintains in left side); was ill eleven weeks; then twelve weeks before admission second attack, also in left side. Was tapped, and then became so ill that she lost consciousness for a month.	Recovered.	347
30	53	Widow	Right	A mass of blood-clot.	Firmly twisted into cord.	Universal and recent.	A Swiss lady who had just crossed to this country, and on arrival was found to be seriously ill, though she would not admit it, and I could get no history.	Recovered.	359
31	43	Married	Right	Œdematous and full of bright red blood.	Only half turn.	No adhesions.	Heavy flooding for three weeks only symptom.	Recovered.	363
32	62	Single	Left	Dermoid.	Only half turn.	No adhesions.	Other ovary also seat of large tumor which was removed. Also a fibroid outgrowth of uterus; sudden seizure with violent pain and rapid increase of size	Recovered.	377
33	33	Single	Right	Nothing special.	Twist two-thirds from right to left.	No adhesions.	Chill during period while taking the baths at Buxton, followed by rapid increase in size of tumor.	Recovered.	380
34[1]	36	Widow	Left	No record.	A mere fibrous cord; twist from left to right.	The adhesions consisted of a series of vascular bands so close together as to form almost a complete envelope to the cyst.	Was seized with violent pain in the left side one night after an enema; a night or two later had a profuse discharge of greenish fluid from the bowel; continued to flow for twelve hours. Then she got smaller: and is now getting large again. I found at the operation the place where the fluid had escaped into the bowel.	Recovered.	384
35	39	Married	Left	Purple and full of clot.	One and a half turns from left to right.	No adhesions	Inflammation of bowels five or six months back, with much pain in left side. Tumor seemed then to get more into right side of abdomen.	Recovered.	385
36	44	Married	Right	Much old blood in it.	Twist from right to left.	Extensive parietal and omental.	No special history. Increase of size more rapid since birth of last baby.	Recovered.	390
37	53	Married	Right	Bloody fluid and clots.	Like an umbilical cord	Extensive parietal.	Was supposed to have had an ovarian tumor thirty-five years ago, which burst into peritoneum and disappeared. Present enlargement seems to have followed sponge tenting.	Recovered	391
38	27	Single	Right	Ruptured cyst and chronic peritonitis.	Partly twisted; large veins; like umbilical cord.	No adhesions.	No history to fix time of either twist or rupture. Very active, and "always better when rushing about."	Recovered.	392
39	...	Married	Right	General inflammation of tumor; cysts full of blood.	Partly twisted, and very long.	Universal and firm.	Illness began with pregnancy; then miscarriage with rapid growth of tumor and much pain and loss of health. Sister also had ovarian tumor.	Recovered.	393
40	47	Married	Right	Dark fluid and clots.	Cord-like.	Extensive and of varying age; some quite recent.	Thirteen weeks back, attack of pain, diarrhœa, sickness, with much distention; then jaundice.	Recovered.	394
41	45	Married	Left	Full of soft papillomata and blood.	Twist right to left.	General.	Three months after second marriage, began to have pain low down in left side, and was twice quite laid up with it. Tumor has latterly grown smaller.	Recovered.	410
42	28	Married	Right	Quite black and infiltrated with clot	Completely obstructed.	Universal and recent.	Attack of pain in right side three years ago, after falling over a hedge. Frequent attacks of pain since. Most severe one, lasting three weeks, five months ago.	Recovered.	468
43	36	Married	Right	Ruptured cyst, and subacute peritonitis. Much clot in cyst.	Not obstructed.	Extensive and recent.	Rapid enlargement, with pain in right side, after a fall, a month before operation.	Recovered.	469

[1] Compare Fig. 3.

44	40	Single	Left	.....	Outer edge of pedicle was partly cut through by twist, and the rest very œdematous; left to right.	No adhesions.	Pain coming and going in left side for about a year.	Recovered.	478
45	59	Widow	Left	.....	One and a half turns.	General.	Sudden seizure with violent pain in abdomen, about nine months before the operation. There have been occasional recurrences.	Recovered.	472
46	43	Single	Right	.....	Hard cord; left to right.	Parietal, omental and intestinal.	Burst into the bowel three and a half years before operation. I opened the bowel at this spot in separating tumor, and closed it by continuous suture. In early part of year, severe attack of pain in right iliac fossa; another still more severe in June; ill three weeks. Has been getting smaller ever since this last attack.	Recovered.	473
47	58	Married	Left	Dark purple, full of blood and broken clot.	Like umbilical cord, but not obstructed.	No adhesions.	Much free fluid in peritoneum. Patient had rapidly lost flesh, and became very anæmic, though the tumor was small (5¼ lbs.). There had been no special pain, and her age made me fear it might be a malignant growth.	Recovered.	475
48	39	Single	Left	Ruptured and full of pink papillomata.	Small cord-like pedicle.	Chief blood supply from band to bowel.	Pain in left ovarian region for a year; rapid swelling of abdomen four months before operation At time of operation, had diarrhœa, and was passing large quantities of water, with rapid decrease of size. There was general and severe subacute peritonitis and papillary infection.	Recovered.	477
49	39	Married	Left	Cyst, like liver; full of densely laminated clot.	Completely obstructed.	Universal; dermoid tumor of right ovary.	Violent pain in left side, vomiting, diarrhœa, etc., two and a half years ago, just after birth of child.	Recovered.	479
50	24	Single	Left	Ruptured cysto-sarcoma.	Small and slightly twisted.	Slight parietal.	Attack of abdominal pain with rapid increase of size, three months after discovery of tumor. Has never been able to lie on left side since. I aspirated right pleura before performing ovariotomy, and removed three and a half pints of fluid.	Recovered.	487
51	66	Married	Left	Ruptured, and chronic peritonitis.	Small and cord like.	Omental and extensive pelvic.	Pain two years back; increase of size only a year. No pain lately, but more rapid increase of size.	Recovered.	496
52	32	Married	Right	Nothing special.	Three-quarters turn.	No adhesions.	In fifth month of pregnancy; natural labor at term; girl. Just after she became pregnant, severe paroxysmal attacks of pain, which came and went for about a fortnight. No pain since.	Recovered	497
53	57	Married	Left	Full of clot.	Firmly twisted.	Universal.	Pain and retching began five months ago, and she discovered a hard painful swelling in left groin.	Recovered.	512
54	50	Married	Left	Papillomata in cyst and on peritoneum.	Like a rope.	Omental.	Six months ago severe attack of pain in abdomen; after this got smaller for some time, but is now getting large again.	Recovered.	527
55	28	Married	Right	Nothing special.	Like umbilical cord.	Extensive adhesions; some to pregnant uterus.	Caught cold six weeks after her confinement, and had a severe attack of pain in right side; was in bed some days. Nearly two months pregnant at time of operation, and went on to term.	Recovered.	574
56	40	Married	Right	Much blood in cyst.	Partly twisted from right to left.	No adhesions.	Severe attack of pain in January; was ill for a fortnight; slight attacks afterward till March 3d, when she had another severe attack Cyst has grown fast since January; she has grown very pale and thin.	Recovered.	590
57	32	Married	Left	Large patches of deep purple clot on lining membrane; bloody fluid.	Twice twisted from left to right.	Universal recent adhesions.	Sudden attack of pain in left side, five months ago. It returned at intervals for nearly four months.	Recovered.	592

Unfortunately, I have not paid sufficient attention to the direction of the twist to see if this would help at all in explaining how it is first started. I have only noted it in nine cases: three were right-side tumors, and in two the twist was from right to left, and in one from left to right; six were left-side tumors, and in five the twist was from left to right and in one from right to left. It would seem from this small number of observations that the tumor twists more readily inward and away from its own side, and this is, I think, borne out by the few observations recorded by other observers, and is what one would rather expect to be the case if one considers the position in which a small tumor hangs from the back of the broad ligament, and the relations of surrounding organs to it. I think it is not at all improbable that the amount of muscular tissue contained on the inner side of the pedicle may, by its contractions, tend to draw the tumor toward the middle, and thus aid a turn in this direction; possibly this may explain the acute symptoms so frequently following rapid diminution in the size of the uterus and its firm contraction, as after miscarriage or labor.

The arteries with their thick walls are chiefly on the inner side of the pedicle, and if this direction of twist be the common one, it may explain why so much twisting occurs in some pedicles without complete obstruction, the softer veins in the outer parts of the pedicle being less severely pressed upon than the more resistant arteries. I imagine that the complete obstruction of the pedicle depends greatly upon the thickness of the tissues in it, apart from its vessels—*i. e.*, upon the amount of padding round the vessels, a thin pedicle with hardly anything but vessels being much more liable to complete occlusion. Of course, the length of the pedicle and amount of play thus allowed to the tumor are also important factors, any drag upon the vessels after the twist has started being very likely to finish the obstruction; indeed, it is the extreme of this condition which cuts through the pedicle and causes those curious cases of transplanted tumor, some of which will be found in my tables, and to which I shall have again to refer.

Klob has suggested that the alternate filling and emptying of the bladder is the chief predisposing cause of rotation. If this be so, one would expect the tumors to rotate in the direction of the majority of my noted cases, the left side of a right tumor being pushed back and rolled toward its own side of the body each time the bladder fills; thus the habit of allowing the bladder to become greatly distended before emptying it would become a predisposing cause of rotation.

It is somewhat difficult to carry in one's mind exactly what is meant by twisting from right to left, or *vice versâ*, and I have, therefore, given diagramatically the direction of the lines made by the twist in a pedicle on the right side, when seen from above, as in an ordinary ovariotomy.

I am still inclined to regard my original suggestion, that it is the

peristaltic action of the intestines which starts the rotation, as the correct one. I recently punctured the intestine on the right side with a fine trocar, to give temporary relief to an old gentleman dying of obstructed intestine, and greatly distended with gas; after the first rush no gas came for a time; then the portion of the trocar outside began to move round in a semi-circle, travelling from right to left, until it reached

FIG. 1.

a certain point, when there was an immediate escape of gas, the peristalsis ceased and the trocar resumed its former position, the whole proceeding going on with the regularity of clock-work for a considerable time, a period of complete rest being followed by a gurgle in the intestine, which warned us that the trocar would begin to move. Doubtless, a similar regular action goes on in health as the contents of the bowel move, and, according to the portion of the tumor pressed upon and the part of the bowel pressing, would be the first impulse to turn, which each succeeding peristaltic movement would increase, unless the elasticity of the pedicle was sufficient each time to draw it back into its original position.

Whatever theory we accept as to the mechanism which starts the twist, I think we must admit that the shape and regularity or irregularity of the surface of the tumor must have an important bearing, and this is supported by the relatively large number of dermoid tumors found in my tables—eight out of fifty-seven; these tumors very commonly have hard projections from their walls upon which the motive force would naturally gain a purchase. The total number of dermoid tumors in the six hundred ovariotomies is only forty, or six and a half per cent., while the number of dermoid tumors among the cases of rotation is over fourteen per cent. I have omitted in the tables certain columns which will be found in my complete ovariotomy tables, because I wished to keep the former within reasonable space. Among these columns is that stating the weight of the tumors; it is of interest to remark, however, that tumors with twisted pedicles are usually of small size, thirty-six of them under ten pounds in weight, many of them five pounds or under, and only eight being twenty pounds or over; all the

bearers of those, who gave a reliable history, fixing the acute attack at a period when the tumor was in its early growth. This is only what one would expect, for when the tumor becomes large enough to distend the abdominal parietes it would be impossible for any intraperitoneal forces with which we are acquainted to rotate a tumor thus firmly held.

We now pass from the few facts and plentiful theories as to the etiology of the condition to its pathological results, which are very definite. First, we have interference with the circulation; the firm arteries, resisting pressure, continue to pump in blood, which the yielding veins cannot return quickly enough, so that congestion with exudation of serum, rupture of vessels and extravasation of blood, and rapid enlargement of the cyst result. These processes are accompanied by acute pain, chiefly referred to the pedicle, and due to the pressure to which its nerves are subjected, but also in extreme cases extending over the whole surface of the tumor; also by reflex symptoms, such as vomiting and collapse, and by fainting and pallor, the result of the internal hemorrhage. The strong fibrous covering of the tumor prevents rupture of the external vessels, and in the majority of cases confines the effused blood; but if, as sometimes happens, previous inflammatory changes in the cyst-wall have caused blocking of vessels and deficient nutrition of portions of its substance, these, being soft and lacerable, give way, and the mixture of ovarian fluid, serum, blood and clot is poured into the peritoneum. This accident is, as we have seen, often speedily fatal; but in many cases, the pedicle vessels being closed by clot, the hemorrhage ceases, the effused matters, after causing more or less peritonitis and effusion of parts, are absorbed, and the patient slowly recovers, till the rent in the cyst heals, and the adhesions affording a new blood supply, the tumor starts growing again. A glance at the adhesion column in my tables will show that in the great majority of the cases extensive adhesions are the rule, but there are a few exceptions, due apparently to the twist being only partial, or taking place so gradually that the tumor is able to accommodate itself to the change in its blood-supply, and either enlarges very slowly or ceases to grow at all, and gets smaller from the gradual reabsorption of its fluid contents. Some few cases are on record in which a tumor atrophied and ceased to be a cause of trouble in this way. Exactly a fifth of my cases had no adhesions; several of these were only partially twisted, and in only one of the non-adhesive tumors was the pedicle completely obstructed, and in that one there was a very clear history of a gradual twist, the symptoms recurring at each monthly period.

It seems perfectly clear that whatever amount of twisting there may have been going on, it is only when the acute stage is reached that the peritoneum becomes involved and adhesions take place. Thus, when operating, one could by the nature and strength of the adhesions usually

fix pretty nearly the length of time which had passed since the acute stage; just as one can say, this patient has had several successive attacks, being guided to this conclusion by the varying condition of the extravasated blood.

The adhesions are pathological in their origin and in their after-growth, for without them the tendency would be toward atrophy; whereas, through them the tumor speedily obtains a fresh blood-supply and starts into fresh activity. They have also more immediate ill-effects, leading, in some cases, to discharge of the cyst contents into the bowel or bladder, and in others, to fatal obstruction. Then, when ovariotomy has to be performed, they somewhat, though not greatly, increase its immediate risks, and also those more remote, such as recurrence of growth and obstruction of intestine.

FIG. 2

Showing universal nature of adhesion.

The immediate mortality of ovariotomy in these cases is not much, if at all, in excess of that of any large number of cases of other nature. Four only of the fifty-seven died, and two of these deaths were certainly due to infection of the cyst contents by tapping rather than to the mere rotation or its effects on ovariotomy.

We must now return to the history column, and by its aid study the diagnosis of rotation. If the patient be known to have an ovarian tumor before she suffer from any of the symptoms there described, their appearance should at once put her medical attendant on his guard, and cause him to seek for confirmatory evidence in support of

the suggestion they make, prepared to advise early ovariotomy if the diagnosis is strongly probable or certain.

If the presence of the tumor be not suspected before the acute attack, it may be much more difficult to make a diagnosis, because the patient will be in such pain that examination is difficult or impossible, and the peritoneal symptoms may rapidly supervene and mask those more directly due to the rotation. Any sudden attack of pain in the situation of either ovary, especially if it occur in connection with menstruation or pregnancy, should be a ground for a careful bimanual examination at the earliest possible opportunity, when the tender, twisted pedicle will very probably be felt to one or the other side of the uterus. I was able to feel it distinctly before operation in a large number of my cases, and have no doubt it would have been more readily detected in others, had they come under my notice while it was tender, and before it was masked by surrounding adhesions.

The other symptoms which are important in making a diagnosis are sudden increase in the size of the tumor, usually accompanied by faintness, pallor, quick pulse and other signs of internal hemorrhage. These symptoms are often accompanied or quickly followed by those of peritoneal disturbance, tympanites masking the tumor, nausea or vomiting of green or bilious fluid and difficulty in passing down the flatus which has rapidly accumulated in the bowels, from the muscular coat losing tone as a result of the peritonitis. Sometimes there is hemorrhage from the uterus, but this is not a constant or even a common symptom. If any portion of the cyst-wall has become soft and diseased, from the blocking of vessels already referred to, it will very likely give way, increasing the peritonitis; then, as this subsides, the tumor will have become smaller or perhaps have disappeared, with diarrhœa or profuse flow of urine. The illness brought about by this acute stage of the twist may pass off quickly or may last many weeks; and the nature and extent of the adhesions probably depend upon the longer or shorter duration of the peritonitis.

If it were possible to make an immediate diagnosis, I think there can be no doubt that the proper course would be immediate ovariotomy before peritonitis sets in; if, however, the symptoms of collapse and hemorrhage have passed and those of acute peritonitis become marked before the surgeon sees the patient, I am certain he will be wise to hold his hand and let the acute stage pass before performing ovariotomy.

If there is reason to believe that hemorrhage is still going on and the patient's life is obviously in danger from this cause, all risks must be faced and ovariotomy performed. Such a case was No. 21 in my table, but the peritonitis continued and became more general after operation, the patient sinking in forty-one hours from obstruction of the intestines. The more I see of abdominal surgery the more I am convinced that

operation during acute peritonitis is very dangerous, whereas, in the subacute or chronic stage, the patient bears operation as well or better than with a perfectly healthy peritoneum.

There is abundant evidence that rotation of an ovarian tumor is, in a certain number of cases, an accident immediately dangerous to life; but so is any operation during acute peritonitis, and the large number of cases which I here record shows that the majority will get over the acute attack if kept quiet and properly treated, and may then be operated upon with as good a chance of success as if the rotation had never occurred. Most likely, the majority of the cases that die would get well if the condition was correctly diagnosticated and treated, absolute rest, ice to the head or to the abdomen to keep down the temperature, opium to allay pain and control the peritonitis and careful rectal feeding and stimulation to support the strength being the leading indications.

It is probable that the rotation is generally a slow process, a certain amount of twisting gradually taking place and causing congestion and increased growth for some time before some sudden change in the circulation or some mechanical accident causes a complete venous block, and the arteries still forcing blood into the tumor, the acute stage is reached.

I will now briefly recapitulate the facts which my tables seem to establish, leaving the theoretical suggestions I have ventured to bring forward to be confirmed or disproved by further experience.

Rotation of ovarian tumors is of frequent occurrence, Rokitansky's observations on the dead showing that it occurs in over thirteen per cent., and mine, on the living, that it occurs in about nine and a half per cent. of all cases of ovarian tumors; the difference in our figures being due, 1st, to the fact that early ovariotomy being now the rule, more tumors are removed before they have a chance of rotating than at the time he made his observations; 2d, to the fact that a certain number of cases will probably die of the complication, and these do not come into my tables.

It occurs with greater frequency during the period of active menstrual life than at the two extremes, and more often in married than in single women.

It is so frequently associated with pregnancy that this condition must be considered a predisposing cause.

It is also especially apt to occur with dermoid tumors. Adhesions are the rule whenever the acute stage has been reached, but there are some few exceptions, and slight twisting does not seem to cause adhesions.

It frequently happens that the circulation throughout the pedicle is entirely cut off, but a fresh blood-supply is usually rapidly obtained through the adhesions. Tumors of the right and left ovaries are equally liable to rotation, and may twist either to the right or to the left, but the turn from right to left seems most common on the right side, and from left to right on the left side.

There is no certain evidence as to the motor force which first starts the rotation, and it seems improbable that this can ever be exactly settled, but probably different causes may act in different cases.

The steps of the process seem to be: gradual rotation, without symptoms or serious pathological change, then sudden serious symptoms, with rapid increase of the tumor, then decrease or complete cessation of growth, followed, sooner or later, by renewed activity, as the circulation through the adhesions becomes free enough to replace the diminution or arrest of that through the pedicle.

The extreme pathological result of rotation is division of the pedicle and transplantation of the tumor; Cases 7, 14, 22 and 26, in the accompanying table, illustrate this condition, and it will be observed that all the tumors are dermoids; the majority of cases of transplantation recorded by other observers are also dermoid, so that it is clear that the dermoids are not only, as I have pointed out, specially liable to rotate, but are also specially liable to such extreme rotation that the pedicle is divided.

FIG. 3.

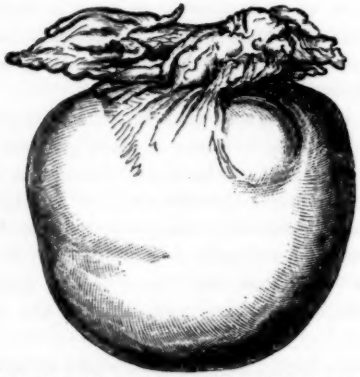

FIG. 4.

Fig. 3.—Dermoid cyst twisted off its pedicle and receiving its vascular supply from the adherent omentum.

Fig. 4.—Stump of pedicle of tumor represented in Fig. 3.

I have said that the extreme pathological result is transplantation, and I have already quoted the opinion of Sir Spencer Wells, that if the arteries are strangulated, gangrene is inevitable; but surely gangrene of the tumor would be a more extreme pathological state than transplantation and renewed growth. Yes; but I deny that gangrene ever results from twisting of an ovarian pedicle, unless there is some element introduced from without to cause death of the tissues, as in Case No. 1, in my table. Other writers, notably Tait, have followed Wells in speaking of rotation leading to gangrene; if this were true, the mortality from

rotation would be far greater than it has been shown to be, and I certainly should not have been able to record fifty-seven cases with only four deaths. Even in the cases in which sudden and complete obstruction of the arterial and venous circulation takes place, gangrene does not follow, because the tumor is enclosed in that great lymph-sac, the peritoneum, and cut off from the external agencies which cause gangrene in a limb or external part under similar conditions of obstructed circulation. The tumor may be black and discolored and full of blood-clots, but it is not gangrenous or sloughing; its condition is one of acute inflammation which rapidly spreads from its peritoneal covering to the other peritoneal surfaces in contact with it, and the peritonitis may be so severe as to cause the death of the patient; but to say that the tumor becomes gangrenous and kills the patient is contrary to all we know at the present day of the pathology of death of tissue in the living body. Blood-clot contains, in a marked degree, the vital elements which resist putrefactive changes and death, and its presence in large quantity in these rotated tumors is one of the greatest safeguards against their death, giving time for the reëstablishment of the circulation through the rapidly adhering peritoneal surfaces.

It is conceivable that in a patient with very little vitality or with a very depraved condition of the blood, rapid growth of putrefactive organisms in the tumor might lead to real gangrene or sloughing, but no such case has yet been recorded, and I think it is extremely improbable that the organisms could live in such a highly vascular and highly organized part as an ovarian tumor, and in order that these organisms may act at the moment of complete strangulation, they must already be occupying the ground. Of course, in cysts that have been tapped, and into which organisms may thus have gained access from without, the conditions are altogether changed, and then, as in my case, if acute strangulation follow, real gangrene may result. It is also possible that the Fallopian tube may bring the elements of septic change into contact with a strangulated ovarian cyst, and produce a true gangrene, and this may be the pathology of some of the cases fatal after delivery or abortion; but to prove the truth of the theory we must have careful microscopic examination of the tissues in such a case, showing the presence of the cocci, and cultivation experiments also, if we are to be sure that the cocci are those known to produce poisonous change in the blood. I know of no such demonstration having yet been made.

Bibliography.

Rokitansky: Zeitschrift der K. K. Gesellschaft der Aertze in Wien, 1865. "Ueber die Strangulation von Ovarial Tumoren durch Achsendrehung." *Spencer Wells:* Diseases of the Ovaries, 1872, p. 83; Ovarian and Uterine Tumors, 1882, p. 60. *Klob:* Pathologische Anatomie der Weiblischen Sexual Organe, Wien, 1864. *Peaslee:* Ovarian Tumors, 1873, p. 80. *Van Buren:*

New York Journal of Medicine, March, 1850, and March, 1851. *Skene:* American Medical Monthly, April, 1861, p. 375. *Patruben:* Oesterreichisches Zeitschrift für practische Heilkunde, 1855. *Wiltshire:* Transactions of the Pathological Society of London, 1868, p. 295. *Edwards:* Lancet, vol. ii. p. 336, 1861. *Barnes:* St. Thomas's Hospital Reports, 1870. *Malins:* Lancet, 1877, vol. i. p. 529. *Knowsley Thornton:* Transactions of the Pathological Society of London, vol. 1876, xxvii. p. 212; Medical Times and Gazette, 1877, vol. ii. p. 82. *Veit:* Archiv für Gynäkologie, 1878. *Tait:* Transactions of the Obstetrical Society of London, 1880, vol. xxxi. p. 86; Diseases of the Ovaries, 1883, p. 294. *Doran:* Tumors of the Ovary, London, 1884, p. 118; Gynecological Operations, 1887, p. 176.

TWO CASES OF TYPICAL IMPETIGO SIMPLEX.[1]

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Considerable scepticism obtains in the minds of some eminent dermatologists concerning the existence of a distinct disease of the skin entitled to the name impetigo. They, for the most part, regard all such manifestations as forms of pustular eczema, as impetigo contagiosa or as lesions due to parasites or to external irritants. Recently, Dr. T. Colcott Fox, of London, in his annual report of the Department for Skin Diseases in the Westminster Hospital,[2] states that he does not recognize impetigo; and that if such an affection does exist, he has doubtless confounded it with impetigo contagiosa. In view of these facts and that I am quoted by Dr. Fox as advocating the existence of this disease, a brief account of two cases may prove of interest. They may be regarded as typical examples of this dermatosis. Impetigo must be looked upon as one of the rarer cutaneous manifestations, and, it may be added, I have met with but few instances in which the features were so sharply defined as in the present cases. The well-known so-called eczema impetiginosum, as well as impetigo contagiosa and ecthyma, are all, of course, to be excluded. To these diseases I shall refer again.

The notes of the cases, it may be stated, were made at the date of observation.

Case I.—The first is that of a boy, aged four years, a well-nourished, stout, hearty-looking child. The mother states that he has always heretofore enjoyed excellent health, and that this is the first disease of the skin he has ever shown. It began two weeks ago with slight itching, which was soon followed by "whitish lumps, like hives;" shortly after this yellowish-white lesions—pustules—appeared, a few at a time, "lasting several days and drying up." They formed rapidly, from three to five days sufficing to arrive at maturity. There were slight feverish

[1] Read before the American Dermatological Association, at the Eleventh Annual Meeting.
[2] Vol. ii., London, 1886.

symptoms in the beginning, but not any since, although the child is still restless and scratches himself at night. The bowels are somewhat constipated but the appetite remains good.

At the present time there exist about two dozen lesions, situated mostly upon the fingers, toes and legs. They are typical pustules, and vary in size from small to large split peas. In form they are uniformly semi-globular, or dome-shaped, and are raised about a line above the surrounding healthy skin. In no instance are they either acuminated or umbilicated. They are firm; have thick walls; and are tensely distended. In passing the hand over the surface they can be readily detected as firm, distinctly defined elevations. They are mostly of a pale sulphur-yellow or straw color, but in some instances are whitish-yellow, and are seated upon extensive bright reddish, highly inflammatory, non-indurated bases. They are, moreover, discrete, and manifest no tendency either to aggregate or to group. The regions involved are the neck, arms, hands, hips, thighs, legs and feet. The face and scalp remain free. There is one large and conspicuous lesion on the dorsum of the foot.

The case was seen on several occasions subsequently, the lesions each time showing signs of rapid involution. Crusts, somewhat friable, yellowish in color, formed, and in the course of a few days dropped off, leaving a circumscribed reddened surface or spot, which in a short time disappeared. The process showed itself to be benign and superficial in character, and ran its course in from two to three weeks. No treatment, either local or internal, was employed.

Case II.—The second case is that of a boy, likewise four years of age, stout, ruddy, and healthy looking, who was brought to me with a disseminated, discrete, distinctly pustular eruption, which had appeared seven days before. The mother stated that the child was in good general health, and that digestion and the bowels were in proper order. The skin disease had manifested itself first about the face, then about the hands. At present it consists of twenty or thirty disseminated, some few acuminated, but mostly semi-globular, small pea-sized, inflammatory pustules with slight areolæ. They are yellowish, opaque, and, for the most part, without signs of crust. The older lesions are whitish, with only faintly marked areolæ, and are sharply defined and conspicuous. They occur about the eyebrows, eyelids, bridge and side of the nose, and over the temples; also on both hands, including the fingers, which are swollen, and it is here that the disease shows itself most markedly. The backs of the hands, palms and fingers are studded with numerous, discrete lesions, pea and bean sized, circumscribed and semi-globular, and are surrounded with defined areolæ. In form they are rounded or ovoidal, and they are distinctly pustular, being opaque and of a whitish-yellow color. They are elevated about a line above the surrounding healthy skin; and are, for the most part, tensely distended, firm to the touch, have thick walls, show no tendency to rupture, and at a distance resemble in appearance small whitish, sugar "mint drops" stuck on the skin. There is no itching, but the hands feel sore.

The child was seen on several occasions during the following week, and but few new lesions appeared. The older ones became larger, whiter, and crusted into rather friable, yellowish crusts, while some few became flaccid, and through contact had been ruptured, discharging contents streaked with blood. In addition to the impetigo a slight herpes zoster

dorso-pectoralis now made its appearance, which ran a benign and rapid course. The treatment had from the beginning been expectant, and the disease pursued a course ending in spontaneous cure in from two to three weeks.

In both of these cases striking pictures are shown, representing a clearly defined, distinctive disease, the lesions being peculiar pustules which cannot be confounded with those of other pustular diseases. They begin as pustules and run their course as such. The process is a simple and benign one; superficial; leaves only a slight pigmentation, which soon passes away; and in both instances cited ran an acute and definite course. The disease is not contagious. It possesses none of the features and characteristics of eczema, the lesions differing in many respects from those of pustular eczema, the "eczema impetiginodes" of older writers. They are discrete, with no disposition to coalesce; are variable in size, for the most part large, the size of a pea, or, occasionally, even a finger-nail. They differ from eczematous pustules, moreover, in possessing thick, firm, resisting walls, with no tendency to rupture, or to break down and discharge; finally, in being disseminated and in occupying the general surface with no disposition to localize.

From impetigo contagiosa the lesions differ in being from the beginning much more distinctly pustular; in having firmer and thicker walls; and in presenting larger and more bulky crusts. The history of contagion is also wanting. It may further be stated, that there is also a marked difference between these lesions and those of simple ecthyma, which are flatter and tend to spread more evidently on the circumference; yellower, showing a more active pyogenic nature; and more hemorrhagic, indicating a debilitated state of the tissues, the subsequent crust being brownish. In looking into the etiology of the two diseases we find impetigo to occur, as a rule, in healthy individuals, and ecthyma in the broken-down or cachectic.

Idiopathic simple impetigo must also be distinguished from those pustular lesions which not infrequently arise as the result of external irritants and from animal parasites. These causes play no part in the form of disease under discussion. The disease which I have endeavored to illustrate by the two cases just reported, corresponds to the "impetigo sparsa" of Bateman,[1] Wilson,[2] and Hillairet and Gaucher,[3] and others, and in this country has been described by myself,[4] Hyde,[5] Robinson,[6] Buckley[7] and Van Harlingen.[8]

[1] Practical Synopsis of Cutaneous Diseases. London, 1813.
[2] Diseases of the Skin. London, 1867.
[3] Mal. de la Peau. Paris, 1885.
[4] Treatise on Skin Diseases, 3d edition. Philadelphia, 1882.
[5] Diseases of the Skin. Philadelphia, 1883.
[6] Manual of Dermatology. New York, 1884.
[7] Manual of Diseases of the Skin. New York, 1882.
[8] Handbook of Skin Diseases. Phila., 1884.

A CONTRIBUTION TO THE STUDY OF FRIEDREICH'S ATAXIA.[1]

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The definition given by Friedreich, which suited well the cases reported by him, needs considerable modification in order to accord with our present knowledge of the disease, and might read as follows:

Friedreich's ataxia is a chronic, systemic inflammatory degeneration of the spinal cord, developing usually in infancy or childhood, in cases in which there has probably been an arrest of development of the cord during fœtal life; this being the result of some hereditary predisposition. It is situated chiefly in the posterior columns, the lateral and cerebellar tracts and the columns of Clarke, though other parts of the white and gray matter are very commonly somewhat affected, and the sclerosis extends slightly into the medulla. The affection is characterized clinically by a disturbance of the coördination of the bodily movements, developing gradually, advancing from below upward and finally involving the organs of speech. Curvature of the spine, talipes, vertigo and nystagmus are frequent. The patellar reflex is nearly always absent. Paralysis and slight sensory disturbances are not uncommon in advanced cases. Trophic, vasomotor and visceral affections are unusual, and any involvement of intellect is probably accidental.

The cases under my observation are briefly as follows:

Case I.—Sadie T., æt. 23, single. Family history negative, except that the brother was affected by the same disease. The patient was well until 10 years of age, when an unsteadiness of the hands and of the gait appeared, not at all like chorea. After typhoid fever and measles, a few months later, the ataxia was so much worse that the patient was unable to walk without crutches, though the incoördination of the hands was much the same. The disease steadily grew worse; at 16 years the patient was unable to walk at all, or even to sit upright, and speech became involved.

Present condition, August, 1887. The patient can barely move the legs at all. There is slight talipes equino-valgus of both feet; no atrophy of the legs; no patellar reflex. There is some scoliosis of the dorsal region. The grasp is strong, but claw-like; the fingers are held flexed; there is no tremor, but a slow ataxic movement, resembling athetosis, appears while the hands are lying passively in the lap. On voluntary effort great incoördination of the hands develop, not increased by closing the eyes. The muscles of the arms are large and strong. There is a slight jerking motion of the head, but no true tremor; the speech is irregular and jerky, and a very slight and inconstant nystagmus on

[1] Based upon an analysis of 143 cases, collected and tabulated by the author in the Transactions of the College of Physicians of Philadelphia for 1888.

extreme lateral motion can be detected. The eye-ground and the thoracic and abdominal viscera appear to be normal. There is no sensory affection, except the occasional presence of a girdle sensation. The intellect is normal.

CASE II.—George T., æt. 21, single, brother of the last case. At the age of two years he suffered from some acute nervous disease, probably anterior poliomyelitis, leaving him somewhat lame, and with the left leg and thigh considerably wasted and weakened. When 9 years old he had measles, followed by pneumonia, and on recovery was unable to walk without crutches or to sit erect, though the upper extremities remained uninvolved. The ability to walk was partially regained, but the disease still progressed, and at 18 the arms became involved. There is sometimes involuntary spasm of the right leg at night.

Present condition, August, 1887. The left leg is atrophied and powerless; the muscles of the right leg not wasted, but the muscular power decidedly diminished. The knee-jerk is abolished; there is marked ataxia of the legs when the patient is supported on them; the back is bent to the right. The muscles of the arms are unusually well developed and the grip powerful. There is marked ataxia of the arms and hands on voluntary movement; not increased by closing the eyes. The head has a slight ataxic movement, the speech is a little jerky, there is slight nystagmus on lateral motion. The eye-ground and the thoracic and abdominal viscera are normal. The only affections of sensation are a slight diminution of cutaneous sensibility in the upper and lower extremities and a decided involvement of the muscle sense in the latter region.

CASE III.—Annie C., æt. 26, single. Family healthy, except that a brother died of the same disease at the age of 9 years. The patient had scarlet fever at 9 years of age, and after recovery appeared to be weak in the legs, and to have a staggering gait. This gradually increased until at 16 years she could not walk at all. At 22 weakness in the arms appeared. It is not known at what date the affection of speech developed. She complains sometimes of difficulty in swallowing, and of spasmodic contraction of the legs at night.

Present condition, August, 1887. The patient is unable to sit erect, and can move the legs but little. There is slight talipes equino-valgus and dorsal flexion of the toes. The muscles of the lower extremities are but little atrophied; the knee-jerk is abolished. The vertebral column exhibits lateral curvature. The hands are claw-like and their movements very ataxic, though when at rest they lie in the lap without motion. The ataxia is not notably worse when the eyes are closed. The grip is fairly good, but infantile; the muscles of the arms somewhat wasted. There is a slight tremor of the tongue, a trembling motion of the head, particularly on talking or on excitement, and slight nystagmus, but the eye-grounds are normal. Speech is slow and somewhat scanning. Affections of the thoracic and abdominal organs and of the intellect are absent. Tactile sensibility is evidently diminished, but sensation is normal in other respects.

Dr. W. C. Warren, of Waterford, Mississippi, has sent me the notes of 4 cases, 3 of which were very briefly reported some years ago. A short abstract of them is as follows: The father of the family is of a

nervous disposition, but in other respects the family history is negative. In each of the first 3 patients the disease began at the age of 8 years, with staggering, noticed only when first rising in the morning and disappearing later. The unsteadiness after a time became permanent, and the affection next involved the arms, producing marked ataxia, with a tendency to choreiform movements. In the oldest child, Nannie W., now aged 29, the power of walking was lost after a severe attack of bilious remittent fever at 13. Affection of speech began at 23, making it now almost totally unintelligible. There is slight trembling of the tongue, curvature of the spine, painless spasms of the leg, no nystagmus, and possibly slight affection of intellect, as the patient cries almost constantly without known cause. The lower and upper extremities are nearly powerless and held flexed; the muscles, especially the extensors, decidedly atrophied. The knee-jerks are absent, talipes equinus present; there is no definite affection of sensation; the pulse is persistently rapid and small. There is vertigo and some incontinence of urine. The symptoms of the second patient, Thomas W., aged 17, resemble those of his sister, though not advanced to so great a degree. There is, moreover, no vertigo or trembling of the tongue; speech is only slightly slow; the intellect is normal; and the ability to move the arms and legs—though not to walk—is still retained, while all movements become much more ataxic on closing the eyes. The surface of the body is cold. Robert W., aged 15, is less diseased than his brother, in that speech is still unaffected, and the ability to walk by holding to the furniture is still preserved. There is, however, decided vertigo. The last patient, Nettie W., aged 8 years, is only beginning to show evidences of the disease. Since 6 years of age it has been noticed that she staggers when rising in the morning, and only after some effort and repeated balancings with outstretched arms, can she succeed in preserving her equilibrium. After a little exercise this unsteadiness disappears. There are as yet no other symptoms, except that the patellar reflexes are diminished.

History.—As regards, now, the history of the disorder, Friedreich reported the first 6 cases in 1863, and 3 more in 1876. Up to the close of 1876 11 others had been described, making 20 in all. By the end of 1882 the number had reached 47, and now equals 143. These are divided among authors as follows: Friedreich, 9; Carre, 1; Bradbury, 1; Carpenter, 2; Kellogg, 2; Dreschfeld, 3; Kahler and Pick, 1; Schmid, 2; Seeligmüller, 2; Hollis, 1; Gowers, 5; Brousse, 1; Hammond, 6; Coleman, 3; Warren, 4; Leubuscher, 1; Power, 1; Quincke and Rütimeyer, 2; Rütimeyer, 7; Jakubowitsch, 1; Erlenmeyer, 1; Wälle, 2; Teissier, 2; Musso, 4; Massalongo, 2; Charcot, 2; Botkin, 1; Ormerod, 10; Buzzard, 1; Fowler, 3; Fazio, 1; Vizioli, 11; Palma, 1; Seguin, 5; Sinkler, 5; Smith, 5; Putnam, 2; Prince, 1; Fellows, 1; MacAlister, 1; Fagge, 1; Descroizilles, 1; Bury, 4; Galassi, 1; Erlicki and Ry-

balkin, 1; Glynn, 1; Freyer, 3; Blocq, 1; Stintzing, 3; Ferrier, 1; Mastin, 3; Mendel, 1; Shattuck, 1; Joffroy, 1; Osler, 1; Griffith, 3. Besides these there are upward of 57 cases occurring among the brothers and sisters or other relatives, but not under professional observation. Many of these were undoubtedly instances of Friedreich's ataxia.

NAME.—The affection has been variously designated as "hereditary ataxia" [Friedreich], "congenital ataxia" [Mastin], "generic ataxia" [Smith], "family ataxia" [Féré] and "Friedreich's disease" [Brousse]. The serious objection to the first four titles is that they are not always applicable, and express conditions as necessary, which are not always fulfilled. Even the best of them, "family ataxia," is not suitable, for though the 143 cases are divided among only 71 families, there are 24 instances in which but 1 child was affected. The last of the four titles is most commonly employed, and would be the best were it not that paramyoclonus multiplex is also called "Friedreich's disease." To avoid all confusion, I much prefer the name "Friedreich's ataxia," which designates the most prominent feature, and yet imposes no limitations to be violated; and though it may be objectionable in the using of an author's name, it seems the best that can be chosen in the present state of our knowledge.

ETIOLOGY.—*Heredity.* Friedreich's ataxia is essentially one of the hereditary diseases, but the adjective must be taken in the broad sense on which Möbius insists. Direct similar inheritance of the disease itself, or of some form of ataxia, is reported in only 33 cases in 16 families of brothers and sisters, and most of these are very doubtful examples of it. Thus Rütimeyer reports 8 cases in 4 families of cousins, whose great-great-great-grandfather was reputed to have had an ataxic gait. Other instances are described by Brousse, Carre, Botkin, Mastin, Bradbury and others; but only in the cases recorded by Vizioli was there an undoubted example, confirmed by professional observation, of children with Friedreich's ataxia, springing from a father with the same affection. The patients of Smith are probably another instance of this. Polymorphic inheritance—in which there have been other neuropathies, alcoholism, tuberculosis, syphilis, consanguinity, etc., in the family—has in some respects exercised a much more powerful influence in the production of Friedreich's ataxia. Great nervousness or neuropathies, other than the affection in question, are reported in 58 cases; sometimes in the parents only, often in the grandparents, uncles or aunts as well; and their influence is undoubted. Friedreich thought that alcoholism had a strongly predisposing action, since it was present in the parents of 6 of his 9 cases; but its influence has been greatly overrated. It is reported present in the parents of only 31 cases; and absent in the parents, but present in other relatives, of 13 others; but in 7 cases alone was it the only hereditary predisposing cause discovered; and it may have been but

a coincidence here. Tuberculosis has virtually no influence, except as it debilitates the constitution of the progenitors. The same is true of syphilis, which is mentioned as possibly present in but 2 families. The case of Palma's is interesting: of 2 children of a phthisical mother, suckled by her, one died of phthisis, the other developed Friedreich's ataxia; the other children, fed by a wet-nurse, enjoyed good health. Consanguinity is reported in 4 families, and in 3 of them seems to have been the active predisposing cause.

Among the brothers and sisters of cases reported, there have sometimes existed conditions pointing to the existence of an inherited family taint or tendency to the disease. Thus there were 31 other children reputed ataxic in 20 families, but not seen by a physician. Certain other suspicious conditions were present in 13 families; such as stillbirths, early deaths, feeble reflexes, lack of moral sense, phthisis, etc.

Age. The predisposing influence of age in Friedreich's ataxia is shown by the fact that in over one-quarter of the reported cases the first symptoms were perceived before the age of 6 years; and in over one-half before the age of 11 years. In at least 15 cases the disease began in infancy, and in not more than 25 did it develop after 16 years of age.

Sex. The disease has attacked rather more of the male sex; the numbers being 86 males and 57 females.

Acute diseases. The influence of acute, and usually febrile, diseases in precipitating the onset of Freidreich's ataxia is seen in 20 cases. As a rule, the symptoms of the nervous affection appeared immediately on recovery from the acute disease, but in a few instances their development was delayed so long (two years after smallpox, in some of Musso's cases) that the causal relation appears doubtful.

Clinical History.—The disease usually begins with weakness and unsteadiness of the lower extremities, and an oscillating, staggering gait, with frequent falls. Very exceptionally there are other symptoms preceding or attending this; such as eclampsia, vertigo, pain in various parts, curvature of the spine, choreiform movements, dorsal flexion of the toes, palpitation of the heart, gastric disturbance, etc. These are probably often accidental; and disregarding them it appears that the lower extremities were first attacked in 114 of the 143 cases. In 10 instances, the arms, and in 8, the arms and speech were involved simultaneously with the legs. In 2 cases the legs and speech were first attacked, and in 2, the arms alone. The average lapse of time, however, before the upper extremities became ataxic is 6 years, as far as statistics allow of calculation; but the range of variation is very great. Thus in one of Dreschfeld's cases, the interval was 20 years, and in one of my own, 17 years. Ataxic movements of the head and trunk may appear with the affection of the arms or later. The appearance of bulbar symptoms—the affection of speech being usually the first—averaged

only 1½ years later than the incoördination of the arms in 31 cases in which the time of the development of both classes was accurately stated, and the variation was not great. In 18 of these, both classes of symptoms developed at the same time. As the disease advances there may appear more or less paralysis, muscular atrophy, talipes and other contractures, curvature of the spine and, possibly, affections of sensation. The patient may become unable to walk, and speech may be almost unintelligible. Finally death ensues from asthenia or, oftener, from some intercurrent disease. The influence of acute, and usually infectious, diseases in accelerating the course of the disease was seen 14 times in 13 patients, 5 of whom lost the power of unassisted locomotion during the acute illness. The same result followed parturition in one of Friedreich's cases.

Symptoms.—*Ataxia.* Motor ataxia of the lower extremities is directly stated to have been present in 128 cases, and in others, as in some of those of Hammond, it is as directly implied. Freyer states distinctly that there was no ataxia in his patient, in whom, however, the disease was only beginning. The incoördination was increased by closing the eyes in 34 cases, and not increased in 19. The gait is only in a few instances described as like that of tabes. By far more characteristic of Friedreich's ataxia is an "oscillating" gait; "like that of a drunken man," as it is sometimes described. Musso speaks of the gait as exhibiting a lateral projection of the feet, instead of the forward propulsion seen in tabes. Ataxic station is expressly mentioned or implied in 73 cases, and was undoubtedly present in many more. Romberg's symptom was absent in 10 of these, and present in 49. Ataxia on motion of the upper extremities is reported in 111 cases, in 21 of which it was increased by closing the eyes, and in 26 not increased. The incoördination is usually very well marked, so that simple as well as more delicate movements become almost impossible. Prehension is often peculiar, the hand being spread like a claw.

Muscle sense might well be considered in connection with Romberg's symptom did space permit. Comparison between the two in the reports of cases goes to show that there is no connection between them; since in at least one-half the cases in which the muscle sense was normal, as tested by weights, etc., Romberg's symptom was present, and in other instances in which the former was diminished the latter was absent.

Static ataxia, the ataxia of quiet action, the force required to hold any part of the body quiet when unsupported, is claimed by Charcot to be characteristic of Friedreich's ataxia, and absent in tabes. Statistics show that this author and Ormerod are correct in stating it to be one of the later symptoms, and quite common in advanced cases, though it is probably oftener absent than present. It may be seen in athetoid movements of the hand, or as slow, waving motions of the arms when held

outstretched, or even as choreiform movements. Static ataxia of the head is quite frequent; shown by an irregular oscillation, either constant or only when the patient is under some excitement. A nodding of the head is sometimes seen; "like one going to sleep," as Friedreich has described it in one of his patients. Similar ataxic movements of the trunk are reported in a number of cases.

Tremor of some part of the body is found referred to in 8 instances, but is probably in most of them to be attributed to static ataxia. Only in Glynn's case was there anything which at all resembled the intention-tremor of multiple sclerosis.

Choreiform movements, referred to in 17 instances, are likewise, as a rule, only the evidences of static ataxia; being recognized by most reporters as such. They have usually been seen in the limbs, but in 6 cases, grimaces and twitchings of the face are alluded to. Signs of chorea have appeared as one of the earliest or even initial symptoms in a few cases, but statistics do not uphold the view of Pitt that the disease is usually ushered in in this way.

Spasmodic contraction of the muscles is reported in 21 cases. These occur usually in the lower extremities when the patient is sitting or lying in bed, and may or may not be painful. Spasm was also seen in the face in Fagge's patient, often drawing the mouth into a meaningless smile; while Botkin's case exhibited grinding of the teeth.

Paralysis is a common feature, though more usual in advanced cases. It is stated to have been present in 56 patients, and undoubtedly occurred in many others. The so-called paralysis early in the disease is generally merely a manifestation of incoördination. The rate of progress and the degree of paralysis are very variable. One of Vizioli's patients reached a state of complete immobility after suffering from the disease for over 40 years, while in Kahler and Pick's patient, power was nearly gone after 8 years. On the other hand, in one of Friedreich's cases there was no paralysis after the disease had lasted 24 years.

Inability to walk without crutches or assistance from some person developed in 54 instances. It depends oftener on incoördination than on paralysis, since in 10 of the cases it is said that there was no paralysis, and the designation was certainly wrongly applied in many of the remaining. Some patients had never walked; while others retained the power for over 20 years.

Contractures are usually among the later symptoms, and are chiefly represented by talipes. This was present in 27 cases, and was of various kinds, though usually equinus and equino-varus. Dorsal flexion of all or of some of the toes is reported in a number of instances. Contractures of some of the fingers or of the hands or arms are very exceptionally present. Curvature of the spine, usually lateral, and considered by Rütimeyer to be a form of contracture, developed quite frequently (57

cases) as the disease advanced; and though it has in a few instances been observed before other symptoms appeared, its occurrence may have been accidental.

Electrical contractility has not been sufficiently studied to reveal anything of moment. In most cases, when tested, it was found normal, in a few, diminished, in still fewer, increased, and in 3, the reaction of degeneration was present.

Reflexes.—The abolition of the patellar reflex is a very early symptom, as it is a very constant one. It has been reported in 91 instances, and in 30 no observation on it was made. The abolition does not, however, always occur, since the knee jerk was merely much diminished in 7 cases, diminished in 2, normal in 6, normal or exaggerated in 1, and exaggerated in 6. This exaggeration does not necessarily exclude the presence of Friedreich's ataxia, since 2 of the cases exhibiting it belong to 2 of the most typical family groups of the disease: viz., those of Vizioli and of Musso. The knee-jerk will not be abolished unless the lumbar enlargement be involved, and it is easily conceivable that this involvement might fail to occur in undoubted instances of the affection.

The presence of ankle clonus in 2 instances of Friedreich's ataxia must be considered entirely anomalous. The cutaneous reflexes were usually normal, as far as tested; but sometimes diminished, and rarely increased.

Of *trophic symptoms*, the most important is muscular atrophy, which is comparatively unusual, even when paralysis is decided. It was well marked in 11 cases, and slight in 24; affecting the lower extremities more than the upper. Other trophic changes occur with the greatest rarity, and are possibly accidental.

Vaso-motor affections are chiefly represented by coldness and blueness of the feet (19 cases).

Sensory symptoms are rather noted by their insignificance. Pain of some sort, initial or among the early symptoms, is reported present in 22 cases, and absent in 79, and was usually slight and often probably accidental. Rarely it has been of greater moment, but the absence of the severe initial lancinating pain of tabes is one of the most characteristic phenomena. Pain after the disease is well under way is comparatively more common, though only observed in 47 patients, often slight and probably often unconnected with the disease. Even at this stage lancinating pain is almost unknown. Cutaneous sensibility is at times diminished (47 cases) but exceptionally increased. The diminution has usually been very slight and often questionable, but sometimes it is very well marked, as in one of Stintzing's cases, in which there was total anæsthesia of the lower extremities. Paræsthesias of all forms are rare; girdle sensation, the commonest, being referred to in but 8 instances, in one-half of which it was slight.

Affection of speech is one of the most characteristic of the bulbar symptoms. It is reported in 107 cases, and would doubtless have developed in many or all of the remaining. It is frequently characterized by a jerky, moderately rapid articulation, interrupted by sudden and irregular pauses, often between the syllables—a variety which Friedreich described as "ataxia of speech." Speech may be typically scanning, or simply slow, or confluent, etc., and may become quite unintelligible.

The *tongue* not infrequently (24 cases) exhibits a fibrillary tremor or, less often, a more general twitching or curling. *Mastication* and *deglutition* are only exceptionally interfered with. There was *difficulty in retaining the saliva* in the mouth in a few instances. The *face* has often an expressionless appearance, giving the false impression of deficient intellect.

Eye.—Strabismus is reported in 8 cases, but may have been only accidental; diplopia and blepharospasm are referred to in a few instances; partial atrophy of the optic nerve was seen but twice; and the pupillary reflexes were always present. A characteristic symptom is nystagmus, which appeared in 56 instances, and would have doubtless been seen later in many others. It is less common than the affection of speech, and develops with or later than it. There are only 6 cases reported in which nystagmus was present, without mention of difficulty of articulation. The form is almost always "ataxic nystagmus," as named by Friedreich; *i. e.*, appearing only when the eyes are fixed upon an object. "Static" or ordinary nystagmus is mentioned in but 3 instances. Vision was impaired in a number of cases in which no ophthalmoscopic examination was made.

The *intellect* is reported as possibly weakened in 21 instances, but in most of these the affection was more than questionable. In only a few cases does there appear to have been any actual mental involvement, and the causal relation of the disease to this is very doubtful.

Vertigo is not infrequent (29 cases); sometimes as a very early and perhaps accidental occurrence. It is often severe, and may persist even when the patient is in the recumbent position.

Visceral and *secretory disturbances* are usually slight, possibly accidental. They are reported in 42 cases in all, to be divided as follows: Affection of the bladder, 13; affection of the rectum, 4; impotence, 3 (possibly 4); disorders of menstruation, 10; palpitation, 13; persistent acceleration of the heart, 8; profuse sweating, 3; gastric disturbances, 9; dyspnœa, 5; præcordial anxiety, 2; salivation, 5; polyuria, cough, intermittent albuminuria, nervous crises, each 1. Some of these disturbances were among the early symptoms.

PATHOLOGICAL ANATOMY.—The 12 patients on whom autopsies have been made were those of Friedreich, 5 cases; Kahler and Pick, Brousse,

Smith, Erlicki and Rybalkin, Gowers and Pitt, each 1 case; Rütimeyer, 2 cases. There has been found no change in the brain (excluding the medulla) connected with the disease, except that the pons was small in 1 instance. The medulla was atrophied in 1 case, and the cord smaller than normal, throughout or posteriorly, in 11 cases. Spinal meningitis was present in 10 cases, in 6 of which it was limited to the posterior portion of the cord. There was thickening of the ependyma of the fourth ventricle in 2 instances. On microscopical examination, there was found slight extension of the posterior sclerosis to the medulla in 5 or more cases. The cord exhibited sclerosis of the posterior columns in all 12 patients; sometimes nearly uniform throughout, sometimes more complete above than below. In 6 instances, there was a small portion of healthy white matter next to the commissure or to the cornua. The lateral pyramidal tracts were very uniformly sclerosed in 11 cases; the remaining one being the first case of Friedreich's, in which the more imperfect methods of microscopical examination then in use may have failed to reveal slight changes. It is important to observe that in 7 of the 11 there was a narrow strip of healthy tissue between the diseased portion and the posterior horn. The direct cerebellar tracts appear to have been involved in 7 cases. A peripheral zone of degeneration passing forward from this tract was seen in parts of the cord in 5 instances. The anterior pyramidal tracts were sclerosed on one or both sides to some extent in 6 cases. The columns of Clarke were degenerated in 8, and probably in 9 instances. In a few cases degeneration of various other parts of the gray matter has been reported. Inflammation in and around the central spinal canal occurred in 4 instances; and supplementary canals were seen in 3. The posterior nerve-roots were more or less diseased in all the cases; and some of the strands of the anterior roots in 1 instance. Slight alterations in some of the peripheral nerves are twice reported. The histological changes in the cord consist in an overgrowth of neuroglia at the expense of the nerve-fibres. A finely fibrillated or granular substance develops, and corpora amylacea are frequently very numerous. In 1 instance—a case of Friedreich's—the lateral tracts underwent a simple softening, instead of sclerosis.

Pathology.—Friedreich's ataxia has been variously considered as a form of tabes, a combination of this with disseminated sclerosis, a cerebellar disease and an independent affection. There seems to be no reason now to deem it other than a distinct disease, intermediate clinically between tabes and disseminated sclerosis, or, as placed more exactly by Gowers, between the former and ataxic paraplegia. The opinion of Friedreich and of some others is that the primary lesion is a meningitis, or a sclerosis of the posterior columns spreading by a meningitis. Schultze considered it a diffuse inflammation of the whole posterior half of the cord. There are, however, better reasons for believing it to be a

combined systemic spinal disease, at the least for certain parts of the cord. The early age at which it develops and the smallness of the cord in so many cases render it probable that there occurs, under an hereditary predisposition, an arrest of development of certain nervous systems during fœtal life. This probably takes place, as Kahler and Pick say, at the time of the sheath-formation, since the tracts most sclerosed are the ones last to acquire medullary sheaths, according to the statement of Pitt. Later in life, degeneration of these imperfectly formed fibres occurs.

This view almost necessitates the belief in a systemic degeneration, which is further strengthened by the existence, in so many cases, of the band of healthy tissue between the diseased lateral tract and the posterior horn, as well as by the frequent absence of meningitis, either entire, or from all parts except over the posterior columns. It is clear that in such cases there could have been no spread of the disease from the posterior columns, either by contiguity or by a meningitis.

Diagnosis.—The principal diagnostic symptoms of Friedreich's ataxia are: Evidences of hereditary influences, the occurrence of several cases in a family, early age of development, motor ataxia, static ataxia, affection of speech, nystagmus, talipes, curvature of the spine, some degree of paralysis; further, the absence of knee-jerk, of marked sensory, trophic, vaso-motor and visceral affections, of atrophy of the optic nerve and of affection of intellect. But, as in all diseases the diagnosis must be based on the aggregation of symptoms rather than on individual ones. The affection is especially to be distinguished from tabes, disseminated sclerosis and ataxic paraplegia. Tabes is recognized by its development in adult life and singly, by the occurrence of severe lancinating pain, of optic nerve atrophy, of alteration of the pupillary reflexes, and often of marked trophic and visceral affections; and by the absence of affection of speech and of nystagmus. The gait, too, often differs, as already described. Disseminated sclerosis is very exceptionally hereditary, usually develops at a more advanced age, and further differs in the presence of remissions, static nystagmus, rhythmic oscillations, ankle clonus, exaggerated knee-jerk, intention tremor and disturbance of intellect; and in the absence of Romberg's symptom. Ataxic paraplegia is distinguished by its occurrence in adult life and not in several members of a family; and by the presence of increased patellar reflex, and the absence of nystagmus, and of marked affection of speech. The symptoms of Friedreich's ataxia resemble those of cerebellar tumor only in a single particular; viz., the oscillating gait; and the disease can scarcely be confounded with hereditary chorea, since the latter has a distinctly different history and mode of termination, and exhibits no truly ataxic symptoms or diminution of the patellar reflex.

DURATION, PROGNOSIS AND TREATMENT.—The course of the disease is steadily onward toward a fatal termination, and only in rare cases has there been a temporary arrest. Its duration may be only a few years, but is usually very extended, unless cut short by some intercurrent malady. One patient of Vizioli's, in whom the affection began in infancy, died at the age of 46 years. As far as I have been able to discover, 25 cases are reported to have died, but in only 1 was death evidently the result of advancing weakness; though in 5 the cause is not clearly stated. It follows, therefore, that the prognosis is most unfavorable as regards recovery; and as concerns the duration of life, must be determined for each individual case.

Treatment has been, unfortunately, of little avail, though silver, arsenic, phosphorus, zinc, etc., have been and may be tried. Every means should be used to maintain and increase the general strength by tonic treatment; such as cod-liver oil, change of air, sea bathing, electricity and massage. A plaster jacket was a great relief to one of my patients who had become unable to sit upright on account of the spinal curvature; and one of Smith's cases improved greatly under this treatment, combined with electricity.

REVIEWS.

TREATISE ON DISLOCATIONS. By LEWIS A. STIMSON, B.A., M.D., Professor of Clinical Surgery in the University of the City of New York, Surgeon to the New York, Presbyterian and Bellevue Hospitals, etc. With one hundred and sixty-three illustrations. 8vo. pp. 539. Philadelphia: Lea Brothers & Co., 1888.

THIS work, by Dr. Stimson, is the companion piece to his well-known treatise upon *Fractures*; but, unlike most such works, is an entirely separate volume. It is the most complete disquisition upon the subject in the English language, and probably in any language; not because the author is better qualified for his work than Malgaigne, Cooper or Hamilton, but on account of the vastly increased facilities for collecting illustrative material in the *Index Medicus*, the *Index Catalogue of the Surgeon-General's Office* and the mass of publications which are thus made accessible for this purpose. By means of these resources he has been enabled to present complete descriptions of several rare forms of luxation, which previously had never been adequately observed and studied, and to correct various errors which, having crept into popular text-books, have been widely diffused.

The first 116 pages of the book are devoted to the general consideration of dislocations, including statistical tables in regard to the frequency of luxations of the different articulations, the pathological changes in recent and old dislocations, the complications which may arise and the broad principles of treatment. This part of the work seeks to lay a firm scientific foundation upon which the more practical portion of the treatise may securely rest.

An instructive chapter upon non-traumatic dislocations, especially those of congenital character, forms Part II. of the work. Congenital dislocations are believed by the author to depend upon an arrest of development of the bones forming the articulation, rather than upon any injury to the child during labor or during fœtal life. These congenital dislocations are found usually at the hip, and are frequently double, but the shoulder, elbow and knee are also liable to this malformation, though but rarely.

Part III. deals with special dislocations, and forms the bulk of the work, 417 pages being devoted to this subject. In the preparation of this section, we see evidence of the most thorough investigation and research. The literature of the whole world has been brought into requisition, and the result is a comprehensive and systematic description, not only of the usual forms of dislocations, but of the rare and anomalous forms which are recorded here and there in various publications as curiosities.

Beginning with dislocations of the jaw, the author describes two

unusual injuries which can also be classed as fractures, dislocation backward, in which the condyle of the jaw is driven against the anterior wall of the external auditory canal, with the effect of fracturing the wall of the canal, and of fixing the condyle in an abnormal position; the other is dislocation upward, in which the condyle has been forced through the glenoid fossa into the cavity of the cranium, and is a genuine fracture of the base of the skull, and an exceedingly fatal one, too.

Dislocations of the sternum are the subject of a complete chapter, as are also those of the ribs. Considerable space is devoted to the consideration of dislocations of the clavicle, and it is satisfactory to note that the dislocations of the acromial end of the clavicle are spoken of as dislocation of the clavicle, instead of dislocation of the scapula, which would be the ordinary nomenclature. All these luxations are acknowledged to be easy to reduce, but very hard to retain in position.

Owing to the anatomical configuration of the shoulder-joint, and to its exposed situation, luxation of this joint is of great frequency, forming about fifty per cent. of all cases; hence the consideration of these dislocations is of the greatest importance. Dr. Stimson adopts a classification which differs slightly from that which is in common use. Using the direction in which the primary displacement of the head of the humerus occurs as a guide, he adopts the following schedule:

Anterior.	Subcoracoid; very common. Intracoracoid; exceptional. Subclavicular.
Downward.	Subglenoid; uncommon. Erecta; very rare. Subtricipital.
Posterior.	Subacromial; rare. Subspinous; very rare.
Upward.	Supraglenoid; very rare.

This classification differs first in the substitution of the term "intracoracoid" for "subclavicular," and all dislocations in which the head of the humerus lies to the inner side of the coracoid process are placed in this subdivision. It is somewhat startling to be told that subglenoid dislocation is uncommon, when most English and American authors declare it to be the most frequent of all the humeral dislocations. A sub-variety, luxatio erecta, is added to this group of subglenoid dislocations. Only seven cases of this injury have been described; one of which was observed by Dr. Alberti, of the Charité, in Berlin; and the reviewer well remembers hearing the case discussed in the wards of the Charité a short time after its occurrence. The subtricipital dislocation is another anomalous variety, only one case having been described. The upward dislocation, or supraglenoid, has been seen in but a few cases. The existence of this dislocation has been denied, but the cases of Holmes and Alberti, upon which autopsies were held, have proved that it is a veritable supraglenoid luxation. At a final examination, some years ago, the professor of surgery asked a student from Georgia to mention the dislocations of the shoulder, and he mentioned the upward dislocation amongst the rest. The professor thanked him, and asked him to report the first case of upward dislocation which he might meet. It seems now that we will have to include this as one of the possible luxa-

tions of the humerus, and certainly not give our students bad marks for mentioning it as such.

We are surprised that the test of Dr. Dugas, for all dislocations of the shoulder, is not thought of sufficient value to merit adequate description or a mention of the originator's name. It seems to us to be an almost infallible diagnostic sign. Hamilton's test is also ignored. It is as follows: When there is a dislocation a ruler can touch the acromion process and the external condyle of the humerus at the same time; if the bones are in their normal position, this cannot be done. These tests may not be needed by the skilled surgeon, but are very serviceable to the less dextrous general practitioner.

Quite a formidable array of traction apparatus is portrayed, but most surgeons in these days of improved methods would not dare to use them. We certainly would prefer operative interference under antiseptic precautions rather than a trial of such barbarous appliances, and Dr. Stimson holds to the same opinion. It is a satisfaction to find Kocher's method of reducing subcoracoid dislocations fully described, as it is certainly the easiest and best for most acute cases, and comparatively few practitioners are acquainted with it.

Passing over dislocations of the elbow and wrist, which are thoroughly treated in the text, let us pause to learn the author's opinion as to the difficulty of reduction of luxations of the metacarpo-phalangeal articulation of the thumb. As is well known, dislocations backward of the thumb are sometimes very difficult to reduce, and this difficulty has been ascribed to various causes by different authors. Dr. Stimson favors the view that the difficulty in reduction is due to the interposition of the anterior ligament with the sesamoid bones, and that forced dorsal flexion should be employed, in order to slide the ligament well over the head of the metacarpal bone. The tension of the short flexors also aids in preventing reduction. Forward dislocation of the thumb occurs occasionally, but does not usually present the same obstacles to reduction.

Dislocations of the hip occupy a large space in the work, and justly so. One is struck with the great value of the contributions of American surgeons to the elucidation of the pathology and treatment of this very severe accident. Dr. Stimson's classification differs again from that in ordinary use with English-speaking physicians, and whilst, undoubtedly correct, it seems to us that the usual classification is a good one for working purposes, if we bear in mind that in a few rare cases the head of the femur is found in anomalous positions. Amongst the dorsal dislocations are placed the anterior oblique and the everted dorsal, examples of which are but rarely met with, and are not described in most text-books. The treatment of dislocations of the hip has so radically changed, that the old methods of traction are scarcely mentioned. The recent procedures of manipulation were undoubtedly first introduced by Nathan Smith, of New Haven, but the perfection of the method and the correct interpretation of the principles upon which it depends, are due to the genius of Henry J. Bigelow, of Boston, and his name will always be honorably associated with this method of treatment.

We are admonished that this review has already reached sufficiently large proportions. It only remains for us to say that the treatise is published by Lea Brothers & Co., of Philadelphia, and that the typographical work is good and the illustrations well executed and, with a

few exceptions, demonstrative. Dr. Stimson has produced a most valuable book, and one which will be regarded as authoritative for a long time to come. R. W.

AN ILLUSTRATED ENCYCLOPÆDIC MEDICAL DICTIONARY. BEING A DICTIONARY OF THE TECHNICAL TERMS USED BY WRITERS OF MEDICINE AND THE COLLATERAL SCIENCES; IN THE LATIN, ENGLISH, FRENCH AND GERMAN LANGUAGES. By FRANK P. FOSTER, M.D., Editor of the New York Medical Journal, with Collaborators. Volume I. New York: D. Appleton & Co., 1888.

AN important place certainly exists for a work having the purpose of this dictionary. As Dr. Foster remarks in his preface, a comprehensive dictionary giving adequate attention to English, French and German terms in the same vocabulary has not hitherto been produced. Such a want was partially recognized by Littré and Robin, in appending brief Greek, Latin, German, English, Italian and Spanish vocabularies to their revised edition of Nysten's *Dictionnaire de Médecine*. It was more nearly met in Palmer's *Pentaglot Dictionary*. But a lexicon in which the student of medical science and literature in the three modern languages which contain their largest portion, could find all technical words with English definitions, has not before existed. There is great interest, therefore, attaching to this atttempt of Dr. Foster and his eleven collaborators to accomplish so serious and useful a task.

Anyone's first observation in examining the present volume must be, that its size, being the first of four volumes, is immense. It is a quarto, with small print, 752 pages. The whole work, therefore, may be expected to consist of about 3000 pages. Webster's *Unabridged Dictionary*, of all words in the English language, has less than 2000 pages; Harper's *Latin Dictionary* (1879), with a slightly smaller page but smaller type, has 2019 pages; Liddell and Scott's *Greek Lexicon* (1883), with a page a little larger and similar type, has 1776 pages. Yet these works include all the words of the languages respectively attended to; while this deals only with those belonging to medicine and the sciences collateral to it.

When we come to ascertain how this great magnitude is accounted for, we find that it is not by all, or nearly all, the subjects mentioned being treated extensively as in a cyclopædia. Less than 140 articles occupy more than half a page. Most of the terms are defined briefly, with, generally, their equivalents in Latin, French and German; sometimes in Italian and Spanish. But a number of articles are excessively long. *Acid*, the English word, has a page and a half. But *acide*, French, has more than fifteen pages; consisting of a *catalogue* of French names for acids, with their English equivalents; some cross-references also being given. For much of this occupation of space, we can see no good reason. Take a few lines at random: "A. amido-hippurique; amido-hippuric acid. [B.] A. amido-hydrocinnamique; amidohydrocinnamic (amidophenylpropionic) acid. [B. 38] A. amido-iséthiorique. Amidisethionic acid; taurine. [B.] A. amido-isocaproique. Amido-isocaproic acid; isoleucene. [B.] A. amido-isophtalique. Amido-

isophthalic acid. [B.] See amidophthalic acid." Except where a different name is also used (as taurine, isoleucene, etc.) for the same substance, ninety-nine in a hundred of these renderings from French into English are so obvious as to be quite superfluous. A few words of explanation of the French terminations, under the heading *acide*, would suffice for any student. Similar redundancy occurs with the Latin term *acidum*, which has a catalogue filling nearly five pages. Yet each of these acids will have, under its English name, at least a brief article to itself. *Acetic acid*, for instance, has thirty lines; *acetum*, nearly a page. Under *artère*, *arteria*, *arterie* and *artery* there are nearly thirty pages. Those under the French, Latin and German heading are alphabetical lists or catalogues of all the arteries of the human body, rendering the foreign into English names. Under the English headings, *artery*, we have these all again alphabetically enumerated, with a brief description and twenty-five good illustrations, after Henle. Pausing here, we ask, For whose benefit is this manner of presentation of the arterial system? Will the medical student use it for his study of anatomy? Probably both he and the "busy practitioner" will make shorter, and yet more satisfactory, work of it, with Gray, or Allen, or some other anatomical treatise.

Another question of proportion occurs on turning to articles like those on *allyl*, a page and a half; *aloe*, *aloes* and *aloès*, four pages; *aluminium*, nearly two pages; *ammonium*, nearly eight pages; *amyl*, more than two pages; *antimoine*, *antimonium* and *antimony*, between five and six pages; but, most remarkable of all, *anemone*, about one page; *aristolochia*, more than two pages; *artemisia*, the same; and *astragalus*, almost entirely treating of the botanical genus, nearly two pages. Yet we find *angina pectoris* disposed of in less than a column, and *auscultation* in less than a quarter of a page. Under *asthma*, the descriptive part fills twenty lines; the remainder, a page, contains a catalogue of terms indicating the varieties of asthmatic affections, as they are named in different languages. No word is said, moreover, in this article, concerning the *treatment* of asthma. Surveying, then, the enormous accumulation of chemical, botanical and linguistic learning brought together in some of these articles, we cannot resist the temptation to paraphrase the famous saying about a scene upon the battlefield: "*C'est magnifique, mais ce n'est pas la médecine.*"

Several articles, on important subjects, have a good measure of cyclopædic fulness, with ample illustrations; as those on *amputation*, *apparatus*, *bacillus*, *bacterium*, *bandage*, *bone* and a few others. Yet the work is far from possessing the symmetrical completeness of a cyclopædia. It is, with some exceptional enlargements, a trilingual dictionary. As such, it has great value. But we cannot withhold the opinion that all the really important advantages of such a dictionary might have been obtained without passing much beyond the limits usual to such a work. With one-fourth of its present bulk, it would have been more convenient for use, and, because of its lower cost, it would have been available for a much larger circle of readers. As, however, there are many who need a work to meet its main purpose, we may hope that the stupendous labors of its preparation may not be without sufficient reward.

A few words may be said concerning Dr. Foster's system of orthography for medical words. In his preface he asserts a general regard for etymology in choosing between two ways of spelling the same word.

Thus, he prefers *thyreoid* to thyroid, *aneurysm* to aneurism, and *rhachitis* to rachitis. In these days of phonetic spelling reform, Volapük and World-English, brevity and simplicity are steadily gaining in the contest with etymological prepossession in orthography. We believe that lexicographers will do well to respect this tendency; not only because it is manifest in popular usage, but because it has in its favor the highest literary authority, and belongs to an inevitable movement of cosmopolitan progress. H. H.

PTOMAINES AND LEUCOMAINES, OR THE PUTREFACTIVE AND PHYSIOLOGICAL ALKALOIDS. By VICTOR C. VAUGHAN, Ph.D., M.D., Professor of Hygiene and Physiological Chemistry in the University of Michigan, and Director of the Hygienic Laboratory; and FREDERICK G. NOVY, M.S., Instructor in Hygiene and Physiological Chemistry in the University of Michigan. 12mo. pp. 316. Philadelphia: Lea Brothers & Co., 1888.

THIS excellent work really fills a long-felt want and will be warmly welcomed by the scientific world, for in a short space it tells of the accumulated knowledge concerning the mysterious productions in organic matter. Scattered through chemical and physiological literature are accounts of the ptomaines and leucomaines, but this work is the first attempt to collect all the facts of value relating to them. Sir William Aiken, 1887, delivered a lecture at the Army Medical School at Netley on the Animal Alkaloids, which was subsequently published in a book of sixty pages; and Dr. A. M. Brown edited a translation of a work by MM. Gautier and Peter on the Ptomaines, Leucomaines and Microbes. These treatises, however, only review the subject in a partial way and but portions of the large field were gone over. The book now under review is the first comprehensive treatise, and carries the reader through the literature of the subject, and furnishes an exhaustive history of the chemistry and pathological bearings of the microörganisms and their results.

The importance of the subject may be appreciated when we learn that the study of bacteriology, now so interesting and valuable to the scientific world, is not complete without a knowledge of the results produced by the minute organisms, for, as has been stated by Vaughan, the small bodies seen under the microscope may be either the cause or effect of a disease, while the ptomaines produced by these organisms may be the factors responsible for a condition necessary to the life of one of the lesser organisms, while, on the other hand, the organisms may be products of the ptomaine.

The book convinces us that no person can grasp the full importance of the study of bacteriology without a knowledge of the chemistry of the ptomaines. If, for instance, we take the case of poisonous fish or meat; or find under the microscope certain bacteria, and if our investigation be continued no further, we may ascribe the poisonous effect to these bodies. But if the subject is followed more in detail we shall ascertain that a real poison, capable of being isolated and demonstrated by means of reagents, is present, and that the bacteria are either products of this poison or really subsist on it.

Without going more into detail, we would recommend the perusal of this important work. The authors have divided the topic into convenient branches, such as the ptomaines found in poisonous food, those that are the cause of effect of disease and those of interest to the toxicologist, as giving reactions identical with some of the vegetable poisons.

At the close of the book the authors give a complete and exhaustive bibliography of the subject, which will be a valuable aid to students and others investigating special branches of the study.

We congratulate the writers on their successful contribution to scientific literature, and would cordially commend the work as a readable and valuable treatise on an interesting topic. W. K. N.

LECTURES TO PRACTITIONERS. I. ON THE DISEASES CLASSIFIED BY THE REGISTRAR-GENERAL AS TABES MESENTERICA. By W. T. GAIRDNER, M.D., LL.D. II. ON THE PATHOLOGY OF PHTHISIS PULMONALIS. By JOSEPH COATS, M.D. 8vo. pp. 285. With twenty-eight engravings on wood. London: Longmans, Green & Co., 1888.

THE lectures contained in this volume were delivered in the Western Infirmary, Glasgow, during the month of October, 1886. Owing to various circumstances, chiefly connected with the professional engagements of the authors, there was a delay of over a year in publishing them. This delay, the authors explain, has been of no detriment to the book, as it has permitted a fuller revision than would have otherwise been possible. In this view we fully concur, seeing that the interest and real value of the lectures lies not so much in the facts presented as in the way in which they are presented, and in the strong impress of the individuality of the author which each set of lectures bears. Whatever changes of view in regard to tuberculosis may occur in the course of the next ten years, whatever fact-obscuring fogs of traditional opinions may, by that time, have been swept away, these lectures will still be read with interest by students of pathology, if not for the truth of what is written, for the way in which it is said.

Yet the facts are all-important. If there is any way to a rational treatment of tuberculous diseases, to a certain prophylaxis against their spread, it lies through their pathology—a country well cleared of late but still abounding in obscure by-ways and misleading landmarks. The civilized world, medical and lay, is rather apathetic about consumption. It has gotten rid of the plague, and nearly rid of typhus epidemics; leprosy has been driven out of England, and smallpox has been made manageable, but one death in seven from all causes is still due to tuberculosis pulmonum, and some part of the remainder is due to other tuberculous diseases. If we feared these diseases as they merit, as we do the cholera or yellow fever, we would in time suffer less from their ravages. But we have strangely grown used to them and view them with a sort of fatalistic indifference, broken now and then by a ripple of interest awakened by the discovery of some new fetish, a wash bottle, or an air-tight box, or some other ingenious device, the impotent offspring of mechanical skill and ignorance of pathology.

Dr. Gairdner's lectures constitute a strong plea for the closer clinical study of the group of diseases designated in England by the term *tabes mesenterica*, and in France by the word *carrean*. The argument is ingenious, logical, telling; it is forcible in style, rich in matter, abundant in illustration; pleasant reading and wholesome teaching. Thus, page 37,

"I am not, therefore, in any way pretending to teach you anything new, when I say that the diagnosis of *tabes mesenterica*, or *carrean*, is inextricably mixed up with the signs of peritoneal rather than those of mesenteric glandular disease; and that it is even doubtful how far the latter enters at all into the diagnosis from physical signs as commonly observed. But I am, nevertheless, clearly of opinion that the precise observation and the just significance of those physical signs *in cases which are not fatal*, but which make, at all events, a temporary, and in some cases a permanent recovery, has not hitherto had sufficient attention bestowed on it, and the consequence of this has been that . . . . the prognosis in these diseases inclines far too much to the grave and even hopeless aspect of them, and fails to recognize the existence of more or less similar cases which would tend to qualify that prognosis."

Dr. Gairdner holds also that the general prognosis in tuberculous and chronic peritonitis is more gloomy than the facts warrant.

We cannot commend too highly these terse, well worked out, practical studies in the pathology of pulmonary phthisis by Dr. Coats. They deserve the attention of the widest audiences of the medical profession, as a clear presentation of the more important facts upon which the doctrine of the infectious nature of pulmonary consumption rests. They are wholly interesting and instructive and, in parts, novel. Space forbids our reviewing them *in extenso*, a fact which will accrue to the gain of those who may be thus influenced to the task at once more pleasant and more profitable of reading them for themselves. J. C. W.

MEDICAL LECTURES AND ESSAYS. By GEORGE JOHNSON, M.D., F.R.C.P., F.R.S. London: J. & A. Churchill, 1887.

"I PROFESS both to learn and to teach anatomy," wrote Harvey, in the dedication of the treatise *De Motu Cordis et Sanguinis*, "not from books but from dissections; not from the positions of philosophers but from the fabric of nature." The learned author of *A Defence of Harvey*, the Harveian Oration of 1882, and the concluding essay of the volume before us, might well have made the same profession in regard to clinical medicine—both to learn and to teach, not from books but from patients, not from the positions of philosophers, but from the facts of disease. Everywhere, the patient is the text; on every page, the symptoms and signs, as determined by morbid changes in function and structure, the relation of pathological to normal anatomy, of pathology itself to physiology form the body of the discourse. Speculation is rare and held within the lines of the facts as the author has seen them; and he sees, for the most part, with clear vision. Not always as other men have seen; sometimes quite differently. The controversies are well known. The lenses of

to-day give not only larger amplification, but far better definition than those of a quarter of a century ago. But Dr. Johnson has seen, for the most part, we repeat, with singular clearness and accuracy. He is at once the pathologist and the clinician, but, above all, the practitioner. Herein lies the value of his writings; they are practical. His pathology is no mere curious research, nor with him is diagnosis only the exercise of much learning and great skill to solve obscure problems, nor therapeutics vain, or at most, an empirical art. He is not of that school. He is robust, earnest, hearty, believing. Not too much concerned with refinements, but vastly anxious to know what is really the matter, how it came about, and how to cure it. A very good kind of a doctor, of a type that will survive the overgrowth of specialism.

These lectures and essays are mostly reprints of papers that have appeared in various forms at different times during the last thirty years. Some portions are recently written; the rest have been carefully revised. They represent the author's latest and most matured opinions upon the subjects of which they treat, and especially upon such vexed questions as the pathology and treatment of cholera and of the various forms of Bright's disease of the kidneys, the relation of membranous croup to diphtheria, and the proximate cause of epileptiform convulsions. The topics are of the most varied kind, their presentation direct and simple, the style matter-of-fact, yet terse and dignified. The illustrative cases are numerous and valuable. Those whose "past is secure" will read these essays with interest; those whose professional life lies before them, with profit; we who stand midway will find in them both entertainment and instruction.

J. C. W.

THE PRINCIPLES OF CANCER AND TUMOR FORMATION. By W. ROGER WILLIAMS, F.R.C.S., Surgical Registrar to the Middlesex Hospital, Surgeon to the Western General Dispensary. London: John Bale & Sons, 1888.

THIS work is intended as an introduction to a contemplated treatise on the pathology and treatment of cancer and tumor formation, in six parts, and including the general and special pathology and treatment of the diseases named.

There are always difficulties in judging the whole from a part, and these seem unusually numerous in the present case. At the very outset we are compelled to stop and try to discover the meaning of the title. Believing, as we do, that the word "tumor" conveys only a negative idea, we hold that cancers furnish the very pattern and model of a "tumor." What our author understands, then, by "cancer and tumor" we fail to gather from this volume. Perhaps in the promised five we shall learn more. A large part of the work is taken up with some curious facts about vegetable neoplasms. The chapters on the development and etiology of animal neoplasms contain no definite advance in those lines.

Whatever may be the similarity between the formation of galls and that of tumors in general, cancer will probably be found to depart most widely from that mode. The adoption of His's histogenetic scheme,

which the author has advocated elsewhere, has much in its favor. We await, with considerable interest, the continuation of Mr. Williams's treatise. G. D.

THE TRANSPORTATION OF THE DISABLED, WITH SPECIAL REFERENCE TO CONVEYANCE BY HUMAN BEARERS. By JAMES E. PILCHER, Assistant Surgeon, U. S. Army. 8vo. pp. 23. New York, 1888.

THE Ambulance Corps of the War of the Rebellion was eliminated in the reorganization of the Federal Army, but recently, after prolonged study of the needs of the service, the Medical Department of the army has formed a hospital corps which will number a thousand men, recruited by four "company bearers" from each battery, troop or company, who shall be especially instructed in carrying and giving first aid to the injured.

Finding the manuals on the subject deficient regarding the use of litters and also extemporized methods of carrying patients immediately after injury, Dr. Pilcher described, in a lecture before the Military Service Institution, in March last, methods which he had devised, and which he demonstrated by trained bearers. This lecture, in pamphlet form, with illustrations, forms a manual of the subject, clear, practical and ingenious, and the Department is to be congratulated upon having such an excellent *brochure* available for the instruction of the corps.

BEITRÄGE ZUR ANATOMIE DES SCHWANGEREN UND KREISSENDEN UTERUS. By HOFMEIER and BENCKISER. Stuttgart: Ferdinand Enke, 1887.

CONTRIBUTIONS TO THE STUDY OF THE ANATOMY OF THE PREGNANT AND PARTURIENT UTERUS.

THIS is a series of sixteen *fac-simile* illustrations of sections made through various uteri, with explanatory text. The illustrations are highly satisfactory, and the text concise and clear.

The conclusion is reached (and, we think, demonstrated) that the uterus in all phases of its physiological and pathological activity consists of three portions: upper and lower segment, and cervix. The lower segment is that part of the uterine body which is between the internal os and the attachment of the peritoneum; this portion is very small in the non-pregnant uterus, but during pregnancy, labor, and the puerperal state possesses distinct anatomical and physiological characteristics; it is clearly distinguished from the cervix. The cervix remains unchanged until the end of pregnancy and continues to possess its characteristic mucous membrane, while the lower segment of the uterus is lined by decidua.

This work furnishes an illustration and amplification of the views of Professor Schröder, and originated in work done by him with the assistance of Hofmeier. E. P. D.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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The Relation of Drugs to the Secretion of Bile.

As is well known, there is no therapeutic question in regard to which so much doubt and disagreement prevail as that relating to the action of drugs on the biliary secretion, or, as is commonly said, on the liver. Observers have so contradicted each other that one hardly knows where to look for truth. Perhaps the experiments of Rutherford have been most generally accepted. Recently Prevost and Binet have published the results of most exhaustive inquiries into the subject, controlling and testing the results of all previous experimentation, particularly that of Rutherford. The experiments are given in exact detail, of much interest from a physiological point of view, and those interested may refer to the original articles (*Rev. méd. de la Suisse Rom.*, May, June and July, 1888). The method employed was to establish a permanent fistula from the gall-bladder, the track of which was opened from time to time for the experiments. The authors lay stress upon this, as they claim for the method advantages over the *canula* in the estimation both of the normal flow and that under medication. In confirmation of the statement of Röhmann, the infliction of the biliary fistula has been consistent with the preservation of good health in the animals, if only fat is withdrawn from the diet.

Bile itself, Prevost and Binet find to be the most powerful cholagogue, whether given in the natural state or in the form of a dry extract. If this be true, and it is only confirmatory of what many other observers have asserted, a good deal of doubt is thrown upon the conclusions of Rutherford, since he, believing the ingestion of bile to have no influence over the secretion of bile, actually used it as a vehicle for many of the drugs with which he was experimenting. Bile is also toxic in sufficient doses, subcutaneously, and will produce death, with symptoms of collapse. The intestine higher up is found,

post-mortem, full of bile; lower down, full of a diarrhœic matter, often bloody; sometimes the urine is bloody.

The following substances [Group I.] these observers have found to increase the flow of bile, viz., urea (in a single instance, c. accompanying severe gastro-intestinal trouble); oil of turpentine and terpine (on the supposed action of ol. terebinthin. on the biliary secretion is based the treatment of biliary lithiasis after the method of Durande. The present observers find that turpentine and its derivatives produce a "notable" increase in the secretion). Chlorate of potassium, which also has long possessed reputation as a cholagogue, increased the flow by once or twice the normal. Further, benzoate and salicylate of sodium (two or three times the normal), salol, euonymin and muscarin (subcut.).

Group II. Substances producing only a slight or doubtful and inconstant increase are, alkaline salts; carlsbad salts, propylamine, antipyrine, aloes, cathartic acid and rhubarb; hydrastis canadensis, ipecac. and boldo. Thus cathartics and the alkaline salts, which Rutherford considered cholagogue in non-cathartic doses, these observers found lacking in any such power.

Group III. Substances diminishing the secretion—iodide of potassium, calomel, iron and copper, atropine and strychnine. In regard to calomel, the writers have not been able to confirm Rutherford, who believed that what cholagogic action calomel had was owing to the transformation into corrosive sublimate. The last-named substance given by itself produced no increase.

Then follows another group of substances which are without action. In regard to the elimination of drugs through the bile, the conclusions of the observers are that it is unimportant, the quantities being so small. It is interesting to note that they found ox bile present in the bile of a dog which had taken it. There is no constancy between the elimination of a substance in the bile and the effect of the same on the activity of secretion. The subject appears to have been particularly well studied and the paper and its conclusions deserve attention.

The Sterilization of Catgut.

Prof. Reverdin, in Geneva, publishes in *Rev. méd. de la Suisse Rom.*, June, July and August, 1888, some conclusions he has made from a clinical and experimental study of catgut. His dissatisfaction with the quality usually furnished by the manufacturers led him to try sterilization by heat, and he found that crude catgut (which has not been treated by any fat to preserve it!) exposed for four hours to a dry heat gradually increased to a temperature of 284° F. (140° C.), then placed for a day in oil of juniper and kept in absolute alcohol, is quite aseptic. His clinical experiences with this catgut cover eighteen months and it has never failed him; while numbers of bacteriological tests have never shown any form of bacterium, though crude catgut and catgut exposed to oil of juniper and alcohol alone gave colonies, the first always, the latter often, showing that the dry heat is the essential factor.

The Present Status of the Iodoform Question.

The many papers on iodoform that have appeared the past year have been brought together by Freyer in *Ther. Monatshefte*, June and July, 1888 (see also

von Kahlden in *Centralblatt f. Bakteriolog.*, 1887, pp. 165 and 194, for a similar *résumé*). Rovsing, one of the Danish investigators who first condemned iodoform, has the latest word on the subject in *Fortschritte der med.*, August 1, 1888, and Neisser (*Virch Arch.*, B. 110, H. 2 and 3) is also one of the last to contribute to the discussion.

It would seem, from the great degree of unanimity among the observers, most of whom, it must be remembered, took up the subject with a prejudice in favor of iodoform, that it may be considered an established fact that iodoform is not an antiseptic—*i. e.*, is not a parasiticide, not a substance capable of disinfecting wounds and of hindering general infection. Nor does its everyday use imply that it is, for it is to be noted that all surgeons conduct an antiseptic operation and make the wound aseptic before applying iodoform. Two effects only are with justice placed to the credit of iodoform, viz., that of local anæsthesia and that of diminishing secretion from wounds. This second action several observers, including de Ruyter and Neisser, have considered explained by the destructive power of iodoform over the ptomaines generated by the cocci, and, further, that it avails to do this through the free iodine or iodine compound which, it seems demonstrated, is liberated in the wound. De Ruyter showed, in support of this theory, that iodoform rendered cadaverin, the best known ptomaine, inert. This, however, does not help the position of iodoform, as Rovsing points out, for even supposing that ptomaines played so important a *rôle* in surgical infection, hitherto all attempts to demonstrate ptomaines in connection with the commonest and most feared bacilli (of suppuration, erysipelas, etc.), have failed, and in any case it would make of iodoform a substance which allowed the disease (*i. e.*, bacilli) to develop, before it began the attack, and came but late to the rescue from certain consequences, the institution of which it had been powerless to prevent. What this fact about ptomaines *may* explain, however, is the undoubted favorable action of iodoform in situations where putrefaction with the formation of stinking ptomaines is unavoidable—*i. e.*, in the rectum, mouth, nose, and in part in the vagina; but even here Rovsing finds an illustration of the central fact, viz., the impotence of iodoform against the bacteria themselves; he has seen repeatedly deaths from septicæmia in extirpation of the lower jaw and vaginal extirpation of the uterus, *where iodoform had kept the wounds fresh in appearance and sweet.*

Bituminated Iodoform.

This new preparation of iodoform originated with Ehrman, assistant in the clinic for syphilis, Vienna, who describes it and reports as to its use in the *Centralbl. f. gesmte. Ther.*, July, 1888, p. 385. It is a chemical product made by the impregnation of tar with iodoform; under the microscope the characteristic crystals of iodoform are no longer seen, but only hyaline plates. There is no trace of iodoform odor, but the preparation smells slightly, not unpleasantly, of tar. This may be covered by a very small quantity of styrax. Large quantities of water bring the iodoform odor out once more, so that in cases of wounds with abundant secretion there may not be entire absence of odor.

Ehrman has used this new preparation in twenty-two cases, especially of

chancroids and buboes, in each case alternating the iodoform for purposes of comparison. In general his cases healed remarkably quickly, but on this he lays no special stress as it may have been accidental, but it is worth mentioning that several cases did well under iod. bitum. that refused to heal under iodoform simp.

Three advantages it seems to have: 1. Absence of disagreeable odor; 2. It does not cause eczema and erythema, the occurrence of which often make it necessary to give up iodoform; and 3. It does not, as is often the case with iodoform, cause redundant granulation in the centre of an ulcer, while at the periphery the edges are undermined and pus is retained.

Sozoiodol.

This substance was introduced by Lassar last year (*Therap. Monatshefte*, 1887, p. 439). It forms a white powder, showing under the microscope flaky crystals, is made up of iodine (forty-two per cent.), phenol and sulphur, is easily soluble in water and alcohol and very stable in mixtures. Applied to a healthy skin it is well borne in powder and ointment, and is soothing to an inflamed and irritable integument. Lassar used it in five to ten per cent. powder and paste (c lanolin or c the oxide of zinc—starch vaseline base of Lassar's paste) and was well pleased with the results in acute and chronic eczemas, herpes, impetigo, inflamed skin, mycotic diseases and varicose ulcers.

Recently Fritsche has reported on its adaptability for throat and nose disease. There are in all four combinations of the substance with bases, viz., with sodium, potassium, zinc and mercury. The first two, of a bitter soapy taste and with an odor like lye, may be applied pure to the nasal mucous membrane, causing only a moderately strong burning and an increased secretion of mucus. The zinc compound must be reduced to a proportion one-fifth to one-tenth, and the mercury salt, which is very irritating, of one-tenth to one-twentieth. All were used as powders only. In atrophic catarrh, ozæna and pharyngitis sicca Fritsche had much better results than with other applications, the secretion being stimulated and the swelling of the mucous membrane, where present, diminished. Operative wounds in throat and nose healed much more quickly than usual. In all of his thirteen cases of tubercular ulcerations the ulcers cleaned and showed a tendency to cicatrize, but at the time of writing none had completely closed over. Fritsche's cases number altogether eighty-eight.—*Therap. Monatshefte*, June, 1888.

Deodorizing of Iodoform.

Iodoform.	gr. xx.
Menthol.	gr. j.
Ol. lavand. puriss.	gtt. j.

One minim of an alcoholic solution of lavender in water is sufficient to keep hands and person from smelling, while the atomization of this solution will keep a superficial dressing from smelling of iodoform.—*L'Union Médicale*, 1888, No. 21.

Ephedrin Mydriatic.

The muriate of ephedrin, in ten per cent. solution, dilates the pupil forty to sixty minutes after instillation of one or two drops. The dilatation continues five to twenty hours. The accommodation is not paralyzed. From its cheapness, easy preparation and innocuousness the author believes it will displace homatropine.—*Schmidt's Jahrb.*, 1888, i. 21.

Hyoscine.

Buddee, in his thesis (quoted in *Deutscher med. Wochenschrift*, May 17, 1888, p. 407), publishes the following results of trials: On the tremor of paralysis agitans, and tremor senilis and alcoholicus it works promptly—also procuring sleep in these cases—the influence on the tremor is not permanent however. A constant effect is a sense of fatigue. The habituation is quickly established so that the dose must be increased.

In the *Lancet*, June 30, 1888, p. 1311, results obtained by Dr. Fischer are quoted. He found it very successful in the treatment of mania and as a hypnotic in the dose of gr. $\frac{1}{120}$ to $\frac{1}{60}$ in distilled water, subcutaneously. Purely as a hypnotic Fischer discourages its use until other drugs have failed, because its depressing effect is felt by the whole system.

Bruce (*Deutscher med. Zeitung*, March 8, p. 245) has found it most reliable as a brain sedative, especially valuable in delirium tremens.

Salgo, chief of insane asylum in Budapest, founds his opinion on several hundred trials (*Ther. Monatshefte*, June, 1888, p. 298) and declares its action in raving, excited patients extraordinarily successful—a sovereign remedy and far superior to all known sedatives as respects promptness, reliability and extent of application. Salgo gives a very exact description of the various steps of its action. In these cases, however, one may scarcely speak of a genuine, full sleep—the patients are always sleepy, one finds, and yet always awake. They may even take their food while under the influence of the hyoscin. Salgo's dose is gr. $\frac{1}{60}$ subcutaneously. From this dose he never saw any bad effects, either immediate or secondary.

Pitcairn (*British Medical Journal*, July 14, 1888, p. 75) reports three cases selected as typical in which he used hyoscine. Case 1, one of delirium tremens, in a man of thirty-two, full of delusions, trying to escape, etc.; on third day, after all sedatives had been tried in vain, hyoscin gr. $\frac{1}{100}$ was injected. In ten minutes patient was drowsy, and in twenty the patient was in a sound sleep which lasted nineteen hours; and on awakening his delusions had vanished. Two other cases were of insomnia and mania, and hyoscine was equally successful after other drugs had failed. In the case of mania, hyoscine gr. $\frac{1}{150}$ brought about a sleep of thirteen hours, and gr. $\frac{1}{100}$ eleven hours. The general excitement on awakening was lessened. Thus he has found hyoscine most certain in its hypnotic action, but the dose must be increased, so that if a second dose is likely to be required it is best to commence with gr. $\frac{1}{150}$.

Observation on Pilocarpine.

Prof. Magnus (*Schmidt's Jahrb.*, 1888, iii. 236), in using pilocarpine as injection in eye cases, found that in two cases the drug entirely failed when

previously its action had been complete. No explanation could be suggested, but this accords with the frequent, disappointing failure of this alkaloid as a diaphoretic.

Antipyrine in Polyuria.

Huchard reported to the Therapeutical Society of Paris (*Le Prog. mêd.*, May 20th, 417) that in a case of diabetes insipidus long under observation, he had succeeded in reducing an amount of twenty-eight quarts to three by the use of gr. xxx–ʒjss of antipyrine; other drugs given as controls proved that the antipyrine was the effective agent. Again, a simple polyuria of ten quarts was reduced in five days to half that quantity. A diabetic passing eleven quarts, after ʒjss of antipyrine per day passed only three quarts, and the amount of sugar was much reduced. In the discussion, Dujardin-Beaumetz said he had found its use very satisfactory in simple polyuria, giving gr. xxx per day, but in diabetes mellitus, though the amount of urine and sugar was reduced, albumin simultaneously appeared.

Eichhorst, (*Münch. med. Wochenschr.*, July 10, 1888, p. 478) saw no good results from antipyrine in diabetes mellitus, but in a case of diabetes insipidus an excretion of twenty-six pints was reduced to normal by gr. lxxv, and held there.

Antipyrine to Suppress Secretion of Milk.

A writer in *Bull. gén. de Thérap.*, June 30, 1888, p. 554, claims to have suppressed the milk in full flow, and after other means had been tried in vain, by gr. viij of antipyrine, and that in three days' time.

Local Anæsthetic Action of Antipyrine Subcutaneously.

Wolff (*Ther. Monhft.* June, 1888, p. 279) attributes to antipyrine a *local* action over pain equal if not surpassing that of morphia. In acute rheumatism, an injection in the neighborhood of the affected joint relieved the pain in three to five minutes, so that—*e. g.*, the patient could without pain raise an arm that was previously helpless. The chest pains of phthisis he saw relieved in five minutes and permanently, and the stabbing pains of pleurisy, etc., so assuaged in a few minutes that a satisfactory examination, previously interfered with by the shallow breathing, was made possible. In muscular rheumatism, in a large series of cases, the pain disappeared after a few minutes, either not to return at all or in a much more moderate degree. We believe that it would be useful for purposes of exact diagnosis in all painful examinations—*e. g.*, fresh fractures (*vide* August number); likewise in neuralgias of superficial nerves and in asthmatic attacks the results were extremely satisfactory.

In short, it is of the greatest possible use in all superficial, localized pains that one wishes to relieve quickly, for its action follows within five minutes, persists ten to twelve hours, and if then the pain returns, it is much modified. The solution is made of fifty per cent. strength in boiled distilled water and filtered several times. A syringeful of gr. viij is given, but oftentimes one-half the quantity is sufficient. No bad effects from the antipyrin were observed, but locally the injection causes, in all cases, some burning pain, which is often intense.

Serious Results from Use of Phenacetine.

Given for migraine in a strong, healthy woman gr. xv caused vertigo and nausea; gr. xv again in three hours, chilly feelings and marked *cyanosis*, with sweating. Patient could not support herself unassisted. The headache remained unrelieved. The symptoms did not wholly pass off for twelve hours. —*Ther. Monhft.*, June, 1888, p. 306.

Ichthyol.

Nussbaum, who has always made much of this substance, has lately praised its effect on neuralgias and osseous, articular and muscular parts. He uses pills containing one-sixth of a grain, two b. i. d., increasing rapidly to two, five times a day. Fischer uses externally in articular pains and psoriasis:

Ichthyol	1
Lanolin	9

In eczema:

Ichthyol	10
Ungt. diachyl.	200

MEDICINE.

UNDER THE CHARGE OF

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The Formation of Subcutaneous Nodules in Acute Articular Rheumatism.

Lindmann (*Deutsch. med. Wochenschr.*, 1888, 519) reports two interesting cases, one in an adult, the other in a child, in which during the course of articular rheumatism numerous widespread nodules rapidly developed, with an increase of some of the rheumatic symptoms. The nodules were hard, somewhat painful, of the size of a pea or bean and movable under the skin, which was not reddened over them. As the patient recovered from the rheumatism the nodules disappeared. The author then makes a thorough review of the literature of the subject, and collects from it fifty-nine undoubted cases, of which most were females, and forty-six were children. The development of chorea or of affection of the heart has often been observed simultaneously with that of the nodules. The latter usually appear suddenly in the later periods of the rheumatic affection, vary in size from that of a pin-head to that of an almond, may be symmetrically situated and persist from a few

days to several months, but usually about three weeks. The microscopical examinations which have been made show the nodules to be composed of newly formed connective tissue of an inflammatory type. It is possible that they are of embolic origin with the presence of microbes, analogous to the vegetations on the valvular leaflets. Their diagnosis should offer no difficulty. Rheumatic urticaria and circumscribed œdema are situated *in* the skin, and the nodules are in other respects quite different from these, as they are from the subclavicular pseudo-lipoma of Potain and Verneuil. They may most easily be confounded with gummata, which, however, become rapidly attached to the skin, grow larger, soften and often ulcerate; while the periosteal gummata soon assume a periosteal wall. The nodules have sometimes a diagnostic value, in that they may be the last sign of a slight and forgotten rheumatism. In such cases they give positive information concerning the nature of a chorea or an affection of the heart. Treatment is seldom required.

Abortive Treatment of Whooping-cough.

Mohn, of Christiania (quoted in *Centralblatt f. ges. Therap.*, July, 1888, p. 441), claims that whooping-cough may be aborted by disinfection of the room by burning sulphur. The patient is moved out, bathed and dressed in fresh clothes, and the room and all its contents, clothes of patient, etc., fumigated by sulphur for the space of six hours. After proper ventilation the patient is moved back, and lo! the whooping-cough is cured in an altogether miraculous fashion.

The Treatment of Diphtheria with Menthol.

Cholewa (*Thérap. Monatshefte*, 1888, ii. 284) reports most favorable results from the application of plugs of cotton wet with a twenty per cent. oily solution of menthol to the nose in cases of nasal diphtheria. In cases in which syringing of the nose had been impossible on account of its being entirely filled with membrane, this method seemed rapidly to remove the membrane and to bring the diphtheritic process to a standstill.

On Perforations in the Skull in Early Childhood.

Henoch (*Berliner klin. Wochenschrift*, 1888, 581) contributes an article on this subject, and describes two cases. He has no reference to craniotabes, or to encephalo-meningocele from congenital defect; but to those forms of openings which are due to trauma occurring before or after birth, producing simply a depression, or a fracture, or both together. Depressions may be caused before or during birth by irregularities in, or narrowness of the pelvis, the use of the forceps, tetanic labor pains, etc. Trauma acting after birth commonly produces a fracture or fissure also. These results often follow falls on the head, whose occurrence the nurse has concealed. Hemorrhage over the seat of injury follows, and if the fissure is large enough to involve a tear of the dura and pia, a "spurious meningocele" is formed. When the injury is severe, the brain itself is involved, and encephalitis develops, which finally terminates in death. The author believes that at

least some of the many cases of death preceded by convulsions in young children soon after birth, and which appear inexplicable, would be found by autopsy to be the result of trauma applied to the head.

Sulphonal in Insomnia.

A. Cramer (*Neurolog. Centralblatt*, 1888, 430) reports the results of 407 administrations of sulphonal to forty-five patients with various mental disorders. 30 times there was no result; 377 times sleep lasting five or more hours was produced, usually one-quarter to one hour after the medicine had been taken. The dose varied from one to three grammes. Unpleasant secondary effects were only observed in one instance, and consisted merely in some sleepiness on the following morning. The author then instituted experiments to determine whether the drug possessed any disturbing influence on the diastasic action of saliva, and on the power of artificially prepared gastric and pancreatic secretions to digest fibrin. The results showed such power to be absent.

Rabbas (*Berliner klin. Wochenschrift*, 1888, 330) has also obtained only good results with sulphonal in the insomnia of mental disorders. In doses of two to three grammes it acts better than either amyl hydrate or paraldehyde; and though sleep is produced by chloral more promptly, it does not last so long. He has found the remedy efficient in the worst maniacal conditions where chloral and paraldehyde had proved unavailing. Most of the twenty-seven cases to whom the medicament was given 220 times were instances of mania and melancholia.

Primitive Progressive Myopathy of the Facio-scapulo-humeral Type.

Interesting in connection with the article of Gray, of which an abstract was published in the preceding number of the Journal, is an instance of muscular atrophy of the infantile facial type of Landouzy and Déjérine, reported by Spillmann and Haushalter (*Revue de Médecine*, 1888, viii. 451). At the age of ten years the patient began to suffer from atrophy of the orbicular muscle of the lips, then of the muscles of the face, at thirteen of the shoulder and arm, at eighteen of the forearm and thigh. The muscles of the calf and the flexors of the forearm were spared. The face was expressionless, immobile, with the eyes and lips protruding. The patient stood or walked with body bent far backward; the hands were held semi-flexed. The atrophy attacked the muscles from the outset without a period of hypertrophy; and in a portion from a muscle in which the process was far advanced, removed for microscopical examination, there was found to be simple atrophy without destruction of the striation or of the structure. There was no fibrillary contraction; the electrical contractility was quantitatively diminished in proportion to the degree of atrophy, but there was no reaction of degeneration. The plantar and patellar reflexes were abolished—a rare feature in this type of progressive muscular paralysis, though it may occur when the atrophy is extreme. Although there was wanting in this case one of the most important symptoms of the affection, namely, an inheritance of the disease, the authors

do not deem this sufficient reason to exclude so well marked an example from the class of myopathies belonging to the facio-scapulo-humeral (infantile facial) type.

Dystrophia Muscularis Progressiva.

Erb (*Münchener med. Wochenschr.*, 1888, xxxv. 443) says that in 1883 he proposed the division of "progressive muscular atrophy" into a spinal form (amyotrophia spinalis progressiva) and a form which was probably myopathic (dystrophia muscularis progressiva). In this last division he includes juvenile muscular atrophy (Erb), the pseudo-hypertrophy of children and the hereditary muscular atrophy (Leyden) and the infantile progressive muscular atrophy with involvement of the face (Duchenne). He maintains the clinical unity of the last four forms as regards, namely, localization of the hypertrophy and atrophy, the state of the muscles on inspection, palpation and electrical examination, the fibrillary twitchings, etc. A still stronger proof is the existence of transitional forms and the numerous cases in which different forms have been observed in the same family. Observations on portions of diseased muscle would indicate that the anatomical process is the same and that the first step is the hypertrophy of the muscle-fibres. There is found, besides this, all stages of transition to atrophy, the formation of vacuoles, fissuring, increase of the nuclei, growth of connective tissue and lipomatosis. The author reserves the discussion of the succession in the anatomical progress for another occasion.

The Treatment of Diseases of the Lung with the Double Salts of Caffeine (Sodio-salicylate of Caffeine).

The well-known stimulating action of caffeine on the cardiac and respiratory centres has led Ye Gempt (*Berlin. klin. Wochenschr.*, 1888, 504, 527) to employ it largely in diseases of the lungs. The double salt is to be preferred on account of its greater solubility and the rapidity with which it is absorbed. 3 grains of the salt per day is seldom sufficient, while over 7½ grains per day is not needed. The number of cases treated was forty. After discussing the subject fully and reporting some of the cases in detail, the author draws the following conclusions:

1. The use of the double salt of caffeine is indicated in the course of acute fibrinous pneumonia whenever observations on the activity of the heart and the pulse show a diminution in the strength of the heart, a fall of the arterial pressure or an abnormal frequency or an irregularity of the pulse; the continuance or increase of which symptoms becomes threatening to life.

2. The drug is to be made use of, when possible, before actual evidences of collapse appear; and if these are suddenly developed, the indication is so much the more urgent and the effect is still often good.

3. In conditions of weakness, valvular lesions, atrophy of the heart, likewise in drunkards and in old persons, its employment should be commenced in the beginning of the disease.

4. The action of proper doses consists in diminution of frequency of pulse and respiration, increase of arterial pressure, lowering of temperature and favorable action on the subjective sensations of the patient. The use of

stimulants is not excluded by the administration of caffeine. They are to be given under the known indications for them.

5. The action of the drug soon commences, but in threatening cases can be made still quicker and surer by means of subcutaneous injection of the remedy. After the fall of temperature caffeine is only to be given for a short time.

6. The same indications for the use of caffeine hold good in atelectatic or hypostatic conditions of the lungs.

7. The employment of the double salts of caffeine in emphysema or asthmatic conditions is indicated by the same signs as those for the use of the drug in diseases of the heart.

The Treatment of Broncho-pneumonia in Children by the Application of Ice.

Angel Money (*Lancet*, 1888, i. 1071) praises the use of the ice-bag in broncho-pneumonia, having now employed it in many severe cases. To be successful the treatment must be carried out thoroughly and systematically; the rectal temperature being the best guide to the application of cold, and the cause of the broncho-pneumonia having no influence. When a rapid effect is desired, two ice-bags may be applied to the head, and one over the chief seat of consolidation in the lungs. This plan of treatment maintains the strength of the heart, the respiratory centres, and the nervous and muscular systems; and convalescence is rendered more rapid. The ice acts not merely by removing heat, but as a sedative. In this way it produces sleep, soothes the whole system of motor and sensory centres, and directly and indirectly quiets and steadies the heart and circulation. The beneficial effect upon the heat centre is well shown by the temperature chart; and a piece of ice applied to one part, especially the head, will produce cooling of the whole surface. Diarrhœa is not increased by the cold method, vomiting is often prevented, albuminuria is not rendered worse by it, and no cases of hæmaturia have been seen. The employment of cold does not obviate the necessity of stimulants, but renders them less necessary.

The Inhalation of Hydrofluoric Acid in Pulmonary Tuberculosis.

Gager (*Deutsche med. Wochenschrift*, 1888, 594) reviews the literature of the subject, and the various trials, mostly favorable, which have been made of the drug in tuberculosis. He then details his experience with 17 cases treated in this manner. In 5 of these the tubercle bacilli disappeared from the sputum, and there was also decided improvement of the condition of the lung, as shown by physical exploration; in 7 there was more or less improvement in these physical signs; in 12 an increase of weight was noted; in 7 cases there was a gain of 100–600 c.cm. in vital capacity. Of 3 patients who had fever, one lost it entirely, and another partially. In one instance night-sweats ceased. In 5 cases there was no result. In no instance did the drug produce unpleasant effects, except in the patients with tuberculosis of the larynx, where it exercised a distinctly irritating action on the mucous membrane of that part.

Cardiac Dyspnœa.

Fraenkel (*Berliner klin. Wochenschr.*, 1888, 289, 315), in an address on this subject, says that dyspnœa appears in very different forms in the different heart diseases, depending on the nature of the affection. It is sometimes premonitory, but is then slight and only occasional; and disregarding this, we may distinguish two forms of severe dyspnœa, the *continual* and the *asthmatic*. The first is especially well seen in stenosis of the mitral valve. This lesion is the least apt to attain complete compensation, and even when this occurs it is by hypertrophy of the right ventricle and necessarily with overfilling of the pulmonary system. The distended pulmonary capillaries project into and narrow the cavity of the alveoli, and this contraction of the alveolar space, together with the slowing of the blood current, and the lessening of the proportionate surface exposed to oxygenation, produces the continual dyspnœa. Digitalis in this lesion sometimes acts very badly, since by stimulating the right ventricle and sending more blood to the lungs it only increases the shortness of breath. Other cardiac affections also are accompanied by continual dyspnœa, as for example cases of progressive failure of the left ventricle with consequent engorgement of the pulmonary system; as is seen in the last stages of cases of "cardiac overstrain," or in heart diseases resulting from psychic depression.

Cardiac asthma, on the other hand, is seen most typically in hypertrophy of the left ventricle with abnormal resistance in the bloodvessels, resulting from arterio-sclerosis. The asthmatic attack comes quite suddenly and usually at night, waking the patient from sleep, and is generally very severe. The lungs are found full of coarse râles, and respiratory pauses may occur like those of Cheyne-Stokes respiration. The affection often resembles bronchial asthma greatly, but may be distinguished by the high tension of the vessels, the absence of expiratory dyspnœa, and often by the discovery of a dilated left ventricle, though this is not always easily detected, owing to an increase in the volume of the lungs. This enlargement is due to the fact that through the narrowing of the arteries the blood is driven into the venous system, or, rather, into the lungs and the left auricle. Hence there is a permanent engorgement of the pulmonary circulation, even when there is complete compensation. The sudden asthmatic attacks are probably due to a sudden temporary insufficiency of the left ventricle, brought about by psychic emotion, increasing catarrh, or some other cause. The heart is already doing its utmost, and this disturbance of the balance produces increased passive congestion and consequent dyspnœa. Autopsies have shown that the heart muscle is of normal structure, and it would, therefore, seem likely that the failure is due to paralysis of the cardiac nerves or ganglia. Fränkel cannot accept the theory of Basch, that cardiac dyspnœa is due to a rigidity of the lungs from their being overfilled with blood; this producing an insufficiency of the respiratory muscles.

Regarding the therapeutics, the author repeats what he has formerly said in praise of morphia and digitalis in combination. The former diminishes the arterial tension, prevents the exhaustion of the respiratory centre by the continued dyspnœa, and cuts short the asthmatic attack, while the latter stimulates the ventricle to greater activity. Calomel may also be employed

for its diuretic and purgative action, thus depleting the system; and though somewhat uncertain, it always benefits that patient to whom it has formerly done good. Strophanthus has been of no value in dyspnœa in the author's experience, except in those cases in which it produces free diuresis. As regards uræmic and dyspeptic asthma; the former is simply cardiac, and has nothing directly to do with uræmia. Cases of the latter have been reported by Henoch, and seem to depend on the presence of undigested masses in the stomach; the affection being relieved by vomiting after lasting one or two days.

On the Treatment of Habitual Constipation in Infants.

Eustace Smith (*Brit. Med. Journ.*, 1888, ii. 7) says that habitual constipation is very common in bottle-fed children and that even those at the breast are not exempt from it. The trouble may be due to a deficiency of sugar in the breast-milk, or to the presence of starch in the diet or to any food which burdens the alimentary canal with a large undigested residue. This sets up a slight catarrh, and the fecal masses, rendered slimy by the mucus, do not offer sufficient resistance to the muscular contractions of the intestine. Another cause is dryness of the stools, this being generally due to an insufficiency of fluid taken. In either case the colon grows accustomed to the presence of the fecal mass, and its expulsive power is soon impaired; while the pain attending the evacuation causes the child to delay it as long as possible, and the constipation is thus made more obstinate. It must be borne in mind that the administration of opium by ignorant parents or unscrupulous nurses is sometimes at the root of the trouble. Constipation may not at all interfere with the general health, or it may produce loss of appetite, colic and violent straining efforts.

When the infant is at the breast a teaspoonful of syrup, three or four times a day, will often quickly restore the regularity of the bowels. If the stools are habitually dry and hard and the urine scanty, it is an indication for the supply of more fluid; and a dessertspoonful of some saline mineral water given at night aids the return of the stools to their natural consistence. The form of constipation due to intestinal catarrh may often be remedied by lessening or removing the starchy matters from the food. Mellin's food is useful in such cases, particularly if barley water be added to the milk to prevent the formation of a dense curd in the stomach. Benger's "self-digesting food" is also useful and does not need the barley water, as the pancreatin digests the curd. When the child has reached the age of ten months, a little veal-broth or beef-tea is advantageous, or a little well-boiled asparagus or broccoli, or a teaspoonful of fine oatmeal to thicken the milk. In other cases the catarrh is due to chilling of the body from insufficient clothing; and the remedy is to swathe the belly in flannel and to leave no inch of the surface of the body uncovered. Frictions of the abdomen following the course of the colon are to be recommended.

A suppository of castile soap, the injection of forty to sixty drops of glycerin or of half a pint of soap and water will produce an evacuation, but is by no means curative. To produce a permanent cure such remedies must be used as regulate the bowels without purging. For this purpose we may employ a mixture of tincture of nux vomica and tincture of belladonna, with

the infusions of senna and calumba; or one of the fluid extract of cascara with tincture of belladonna. Half a grain of sulphur every night is a useful plan of treatment. When the motions are drier than natural, a valuable prescription for a baby of six months old is: Sulphate of soda, 5–10 grains; sulphate of quinine, ¼ grain; tincture of nux vomica, ½ drop; aromatic sulphuric acid, 1 minim; in a teaspoonful of water three times a day before food. This draught does not teach the bowel to depend upon it, but to act spontaneously, so that the frequency of administration can be diminished and the medicine finally discontinued.

The Diagnosis of Abdominal Tumors.

For two years O. Minkowski (*Berlin. klin. Wochenschr.*, 1888, 617) has been devoting his attention to the diagnosis of abdominal tumors chiefly by observing the changes in position which they undergo, if, on the one hand, the stomach be distended with carbonic acid gas, or, on the other hand, the large intestine be filled with water. The position of the tumor is first determined accurately, the stomach being as empty as possible; carbonate of soda is then administered to the patient and followed by tartaric acid, and the stomach in this way distended with gas. The position of the tumor is then again accurately mapped out. The gas is then removed by the stomach tube, the large intestine filled with water by injection—which is to be preferred to its distention with gas—and the tumor again outlined. The author has examined 110 abdominal tumors in this way, and has found that, on thus distending the stomach or intestine the growth tended to move toward the region which the organ would occupy under normal conditions. 1. Tumors of the liver move upward and to the right when the stomach is distended with gas. On filling the intestine the growth moves upward simply; sometimes slightly to the right or left. 2. Tumors of the gall-bladder follow much the same rule as applies to those of the liver. 3. Tumors of the spleen move to the left and often slightly downward on distending the stomach. On distention of the colon they move upward and usually to the left. Movable tumors of the spleen, which have left the normal position, tend to resume it when the stomach, and especially the intestine, is dilated, and to produce again the splenic dulness which had been absent. The filling of the stomach with gas is a very valuable means of distinguishing between an enlarged left lobe of the liver and an enlarged spleen. 4. Tumors of the stomach can often be recognized at once when the stomach is inflated. In other cases the fact that the growth becomes broader, the boundaries more indistinct, the percussion sound more tympanitic and isolated nodules more widely separated from each other indicates that the growth belongs to the stomach. Circumscribed tumors in the region of the pylorus usually move to the right and downward. Tumors of the transverse colon and of the omentum also often exhibit the same change of position when the stomach is inflated, but in many cases the growths of the stomach can be distinguished by the fact that they move in an upward direction when the colon is filled with water. Growths of the lesser curvature usually move upward and disappear backward when either the stomach or colon is distended; but they are subject to other changes of position. 5. Tumors of the colon are often easily recognized, becoming broader when the intestine is filled with water. Tumors of the transverse

colon move upward on inflation of the stomach, but downward on distention of the colon. It is to be noted, however, that growths of the intestine often offer the greatest difficulty in their recognition. 6. Tumors of the omentum are displaced downward by inflation of the stomach, and downward and strongly forward by the filling of the intestines. 7. Tumors of the kidney are not materially affected by inflation of the stomach, but move upward on distention of the colon, are felt with difficulty, and then almost always disappear. If the abdominal walls are flaccid, the intestine filled with water can often be quite easily traced in its course over the tumor. If the kidney is not in its normal position, as is so often the case, the injection of water into the intestine will usually push it into its proper place. Very large renal tumors do not entirely disappear in this way, but are very distinctly pressed outward and backward. 8. In a case of tumor of the pancreas the growth acted much as did those of the kidney, except that on distention of the stomach there was a slight displacement toward the right. 9. Tumors of the ovary are moved by the full intestine forward, a little upward and to the side to which the diseased ovary belongs.

The author recommends that in the investigation of abdominal tumors the inspection of the patient from behind be not neglected. Tumors of the liver or spleen will show a prominence at the lower part of the thorax, and those of the kidney, if of considerable size, at the middle of the lumbar region. Not seldom, however, in the case of growth of the kidney, there will be a depression or diminished resistance of the soft parts in this region. In such cases an evident projection will appear here, when the colon is filled with water. This is one of the most constant symptoms of movable kidney, or of movable renal tumors. Trousseau's method of bimanual palpation may be with advantage applied to the examination of tumors of the liver, spleen and intestine, as well as of the kidney. In many cases, in which a tumor of the kidney cannot be detected in this way, the growth may be felt after the colon has been distended with water and the kidney restored to its normal position. As is well known, the recognition of tumors by their displacement by respiration is often disappointing, since growths of all the abdominal viscera may sometimes move when the patient breathes. In such cases a decision may be reached by fixing the tumor from outside during inspiration. If it is a tumor of the liver, or one adherent to this organ, the expiratory movement upward cannot be thus prevented.

SURGERY.

UNDER THE CHARGE OF

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INTESTINO-PERITONEAL SEPTICÆMIA.

Under this name VERCHERE (*Revue de Chirurgie*, No. 7, 1888) describes, in an exceedingly able article, an affection either not mentioned by surgical writers or classed as a latent peritonitis.

All lesions of the abdomen, accidental, surgical, with or without injury to viscera, may exhibit the typical symptoms of the condition. These symptoms are: an exceedingly rapid and marked meteorism, a profound alteration in the expression, absence of tenderness on pressure, more or less retention of gas and fecal matter, a normal or subnormal temperature during the entire course of the affection till shortly before death, when the thermometer shows a sudden increase of temperature to 103°–104°. The pulse is small and very frequent. There is vomiting, usually bilious, at times, stercoraceous. Nausea and regurgitation almost from the beginning. Anorexia absolute. Thirst intense.

The autopsy shows none of the lesions belonging to peritonitis. There is an active congestion of the peritoneum. Sometimes a small quantity of brownish fetid effusion, sometimes gas. The intestinal distention is considerable. Putrefaction is very rapid. The affection runs its course in eight, ten, or twelve days. Sometimes for the first three or four days the abdominal facies, meteorism and constipation will be the only symptoms, then all the grave phenomena quickly appear, and death follows shortly.

These identical symptoms are characteristic of all forms of intestinal occlusion, strangulated hernia or internal strangulation. Similar symptoms are dependent on similar causes. The cause in the so-called latent peritonitis is referable to pseudo-strangulation. At first the phenomena of peritonism (reflex paralysis) develop; then a mechanical occlusion by flexure of the inflated intestine, from which follows absorption of the septic intestinal contents and intestino-peritoneal septicæmia.

The diagnosis is evident in the majority of cases, and it is necessary to differentiate this distinct morbid process from peritonitis with which it has always been confounded. The therapeutic indications depend naturally upon the primitive cause.

Gastroenterostomy.

Two successful cases of gastroenterostomy are reported by Fritsche (*Correspondenz-Blatt für Schweitzer Aertze*, No. 15, 1888). These, together with Lücke's eight successful cases, considerably reduce the mortality of this operation. Gastroenterostomy is indicated in cicatricial or malignant pyloric obstruction. In the one case it promises a speedy cure with the minimum of danger, in the other, a complete subsidence of all painful symptoms, and months of enjoyable life. One of Lücke's cases survived the operation for more than a year.

Fritsche operated after Wölfler's method. Preparatory nutrient enemata and washing out of the stomach, followed by a one-half per cent. salicylic acid lavage. Median incision, four inches in length, from the ensiform cartilage, downward. A loop from the upper portion of the jejunum, sufficiently free in its attachment to be brought in apposition with the anterior wall of the stomach, was selected. A portion, about a foot and a half from the termination of the duodenum, was chosen for the opening, and loosely tied off from the remaining gut by two pieces of disinfected cotton bandage passed through a non-vascular part of the mesentery. A portion of the anterior stomach wall was compressed between two iron rods protected by rubber tubes, and held together by elastic bands passed about their ends. The incision was two

inches in length, and was made first into the bowel; its upper borders were sutured to the peritoneal coat of the stomach, after which the latter was opened and secured to the bowel by a continuous mucous membrane suture, a continuous Czerny suture, including the muscular and serous coats, finally, a continuous Lembert suture. A portion of the bowel proximal to the fistula was secured to the stomach wall by a few threads. The abdominal wound was closed by a continuous peritoneal suture, a muscle and fascia suture, finally, a skin suture. Of the two cases treated, one suffered from pyloric cancer, the other from stricture in the same region. In the after-treatment, the only complication was due to yielding of the catgut parietal sutures.

Excepting cases of pyloric cancer which have contracted no adhesions, are limited in extent, and have not involved the glands, gastroenterostomy is always to be preferred to pylorectomy. The choice of this operation in cicatricial contraction rests upon the fact that its mortality in these cases is 14.3 per cent. against 57 per cent. for pylorectomy.

The secondary dangers of gastroenterostomy are, spur formation which may completely obstruct the fistula, and compression of the colon by the mesentery of the bowel containing the fistulous opening. Death has followed from both of these sequelæ, with symptoms of ileus.

The Surgical Treatment of Ulcerative Perforation of the Stomach and Bowels.

Steinthal (*Beilage zum Centralblatt für Chirurg.*, 1888, No. 24) reports three cases of ulcerative peritonitis operated on by Czerny unsuccessfully.

Case I.—Servant, aged twenty. Frequently a sufferer from pains in the stomach. Five days before operation pain suddenly developed in the left side. The following day abdominal swelling and dyspnœa. Since then great constitutional disturbance, no stools, no vomiting; on examination, belly swollen, tender and tympanitic, no liver dulness, some impairment of resonance in the lumbar region.

Operation. Incision in the middle line; on opening the peritoneum escape of a quantity of odorless gas. Peritonitis slight. Perforation could not be found. Death in four days.

Autopsy showed a perforation of the anterior wall of the stomach.

Case II.—Waiter, aged thirty-three. A chronic sufferer from pains in the stomach. Three days before operation, after a sudden movement, pain was immediately felt a hand's breadth to the right of the navel, with the sensation of something having given way. Continued vomiting since. Neither gas nor feces by the rectum. Belly greatly swollen, especially in the epigastric and hypogastric regions. Tenderness over the whole abdominal region, but most marked on the right side. Some percussion dulness in lumbar region, extending a hand's breadth above Poupart's ligament to the middle line. Resonance over the liver.

Operation. Incision in the middle line. Offensive gas discharged on opening the peritoneal cavity. Dull percussion sound over Poupart's ligament, explained by a pericæcal abscess. Perforation found at the pyloric orifice of the stomach. Sutured. Death the same night.

Autopsy. Diffuse fibrinous peritonitis; ulcerative perforation by a chronic ulcer of the stomach, with circumscribed peritonitis.

Case III.—Man, aged fifty-two. Woke in the morning with pain in the cæcal region. Rest in bed, ice-bladder, liquid diet following. On the second day after, sudden and violent pain in the ilio-cæcal region, collapse. Swelling of the belly, gradually diminishing percussion dulness of the left lobe of the liver. Swelling and resistance in the ilio-cæcal region, with a circumscribed percussion dulness somewhat larger than a silver dollar.

Operation. Incision in the ilio-cæcal region. No escape of gas. Resection of a perforated necrotic vermiform appendix. Symptoms all favorable till the fifth day, when restlessness, swelling, nausea, vomiting and collapse appeared. Death the next day.

Autopsy. No general peritonitis. Intestines greatly distended.

Of eighteen cases operated on for ulcerative perforation, eight were cured. In five of these eight there was a circumscribed sacculated peritonitis, which was incised and treated as an abscess, with suture of the bowel in one case, and resection of a necrotic vermiform process in another. In the remaining three cases, in addition to the perforation, there was diffuse suppurative peritonitis.

An early diagnosis is a most important element in the prognosis.

In addition to the history, sudden development of peritonitis, with universal tympany, indicates a perforation. If there is rapid development of tympany, with disappearance of the liver dulness, and, on opening the cavity, odorless gas escapes, the perforation is probably in the stomach. Perforation of the ilium or colon is characterized by foul, septic gas. In perforation of the jejunum there is slow escape of contents and gradual development of symptoms.

In these operations the peritoneal cavity should be irrigated by one-sixth per cent. salicylic solution till it comes away clear. The most extensively infected portion of the bowel is treated with bichloride solution. Lowenstein believes that a thorough purification of the peritoneal cavity after perforation is impossible and dangerous. According to Frank, Hahn has operated twice for typhoid ulcerative perforation; both cases were unsuccessful.

Wagner reports an operation in the case of a man who had ruptured a duodenal ulcer by lifting a weight. The diagnosis of intra-peritoneal rupture of the bladder was made. The seat of perforation was found at the autopsy.

Radical Operation for Reducible Hernia.

Cohn (*Berlin. klin. Wochenschr.*, No. 32, 1888), reports 51 cases of reducible hernia, for the cure of which a radical operation was undertaken. Of this number 41 were inguinal, 9 crural, 1 umbilical. The operation consisted in closing the hernial opening by a double catgut ligature, after which the sac was extirpated. Certain difficult and advanced cases required the insertion of additional sutures, the approximation of the columns of the ring, etc. In most of the cases the wound was closed by a catgut suture and rubber or glass drainage tubes inserted. Under certain conditions the wound was packed, and subsequently closed by secondary suture. In women and children satura-

tion of the dressings by urine cannot always be avoided, the tamponade is especially to be commended when this is liable to occur, not because it absolutely prevents septic infection but because it allows of immediate treatment and purification.

Since primary union is frequently prevented by a certain amount of connective tissue-destruction, and since consecutive bleeding is by no means rare, there would seem to be, in these cases, special indications for tamponade and secondary suture. Though the wound is longer in healing, the cicatrix is larger and more dense. The results were most satisfactory in the cases treated by this method. Large pieces of iodoform gauze were used.

If no fever is developed, the packing is removed in six days, and unless there are necrotic shreds of connective-tissue, the wound is closed by a silk suture. A thin layer of gauze, the end of which projects from the lower angle of the wound, provides for drainage; this is usually removed at the next dressing (eighth day). When necrotic tissue is slow in coming away the wound is not sutured, but allowed to close by granulation. The sutures can be inserted and loosely knotted at the first operation, to be tightened when the packing is taken away. After cicatrization the patient wears a truss.

The only contraindication to the operation is an incurable intercurrent disease, such as carcinoma or advanced phthisis. Extremes of age or immense hernial bulk should not weigh against an effort to secure a radical cure. The danger is so slight that every patient suffering from hernia should be advised to submit to an operation.

As to the permanency of the cure, but five cases were investigated. Three of these have not suffered from a return of the protrusion. In the first case a year has passed since the operation, in the second and third cases but a few months. Of the forty-eight patients treated, but one perished as a direct consequence of the operation; in this case acute septicæmia developed.

Sterility in Men.

Fürbringer (*Deutsch. medicin. Wochensch.*, No. 28) classes the conditions which exist in sterile men under two headings. There may be absence of spermatozoa or absence of seminal discharge. Absence of spermatozoa is the most frequent cause of sterility among men. This condition is rarely suspected since coition may be complete, and accompanied by an abundant seminal discharge. After an extended clinical investigation Fürbringer concludes that in all cases of procreative impotence there is permanent azoospermatism, and that the cause of this absence of spermatozoa in the semen is (with few exceptions) an obliteration of the seminal duct due to a double gonorrhœal epididymitis or funiculitis. Since Kehrer found, in forty cases of matrimonial sterility, that the cause lay with the man in fourteen, since coition and ejaculation on his part are, by himself and by the physician, taken as evidence of his competency, and consequently fruitful women are subject to tedious cures and gynecological operations, Fürbringer strongly insists on the most careful examination of the husband, and on the microscopic investigation of his ejaculation in all such cases. The prognosis is absolutely bad in cases which have lasted longer than three months. In aspermatism there is no ejaculation. The permanent form is caused either

by a displacement of the ejaculatory duct by which the secretion is carried toward the bladder, or by a well-marked stricture of the urethra. In the latter case an erection may make a stricture entirely impermeable which, under ordinary circumstances, allows of the passage of a moderately full stream.

Fürbringer observes that the prostatic secretion is the source of the strong seminal odor, the secretion of the testicle being absolutely odorless. The statement is made that the spermatozoa show motion only when mingled with the prostatic fluid.

Cholecystenterostomy.

Chlolecystenterostomy, proposed by Nussbaum, but first successfully performed by Kappeler, has again succeeded in the hands of Socin (*Correspondezblatt für Schweitzer Ærtze* 15, 88).

The patient, æt. fifty-one, had been seized with abdominal pains eleven weeks before the operation, and had shortly become jaundiced. Pain only during digestion. Loss of strength and weight rapidly progressive. On examination marked bronzing of skin and mucous membranes, dryness of the surface, advanced emaciation. The liver extended downward to within a third of an inch of the anterior superior spinous process of the ileum. Beneath its edge was felt a rounded, smooth, fluctuating, slightly tender swelling, the size of a man's fist, movable laterally. Urine contains bile; the stools showed no sign of its presence. Temperature subfebrile. Weight ninety pounds. Obstruction to ductus communis choledochus was diagnosed.

Operation: Free incision along the border of the rectus. The peritoneal cavity was opened, the gall-bladder readily drawn forward, opened, and a pint of gall evacuated. Since neither gall-stone nor any other obstruction was found, a cholecystenterostomy was determined upon. The jejunum was drawn out, an incision an inch and a quarter long made in it, and this opening sewed to that in the gall-bladder. Passage, containing bile, in three days, disappearance of icterus, and in a month a gain of nine pounds.

The Diagnostic Significance of a Tongue-like Extension of the Right Lobe of the Liver, in Diseases of the Gall-bladder.

Riedel (*Berliner klin. Wochenschr.*, No. 29) describes a tongue-like projection of the right lobe of the liver, extending downward, which is sufficiently frequent to be an important aid in the diagnosis of certain obscure inflammatory affections of the gall-bladder. By palpation it can readily be felt as a smooth resisting body, continuous with the liver, moving in respiration, and frequently extending below the level of the umbilicus. The percussion note may be resonant, showing that the depth of the out-growth is not great. In six, of ten cases, the extension was most marked, and in two cases constituted the main diagnostic point.

As to the value of this sign, in itself it is not to be depended upon as indicating involvement of the gall-bladder, since it is found in other inflammatory enlargements which become attached to the liver by circumscribed adhesions (cystonephrosis) or may develop independently of inflammation from constriction (corset liver).

If, however, there is found beneath this outgrowth an area which is painful, or is tender on pressure, if there is a history of hepatic colic, or of severe attacks of vomiting, this peculiar extension of the liver is a confirmatory sign of great significance.

Of the ten cases operated on for inflammation of the gall-bladder, seven are entirely healed, one is in process of healing, and two are left with fistulæ. The discharge in these two cases is very slight.

Suturing of the gall-bladder in the abdominal wound, and subsequently opening it, is commended as an entirely safe operation.

Riedel's technique is as follows:

For two days attention is paid to clearing the bowels. Immediately before the operation a morphia injection is given to make the anæsthetization as quiet and complete as possible. The incision is made over the swelling, through the rectus muscle, if possible, separating its fasciculi. It should be small, an inch and a half to two inches in length. After division of the transversalis fascia and the peritoneum the gall-bladder is seen covered by omentum which must be pushed aside. After exploration, by means of the finger thrust into the peritoneal cavity, an oval surface of the gall-bladder, three-fourths of an inch long by one-fourth in breadth, is united to the peritoneum by six or eight catgut sutures threaded in round needles without edged points. These sutures are passed only through the outer coat of the gall-bladder; this is easy as the walls are much thickened by inflammatory action. In the middle of the oval a silk thread is inserted. This is most important as, after six or eight days, the whole wound is covered with a mass of granulations, and, without some certain guide, opening the gall-bladder might be exceedingly difficult. The wound should not be wedge-shaped at the time of secondary incision but should be, at its deepest part, as broad and long as at the surface, and should expose the entire oval. To accomplish this, small dossils of recently sterilized gauze are packed around the central silk thread to the very bottom of the wound. These dossils are removed in eight days, when an incision, three quarters of an inch long, is made where the silk thread is attached. The incision is gradually deepened, the edges of the wound being held apart by hooks, till the knife enters the gall-bladder. An exploration is now made by the finger, large stones are crushed and removed by a spoon, smaller stones are washed out. The dressing must be changed frequently, at first, as there is usually a profuse flow of gall. The skin about the drainage tube is protected by ointments. In three or four weeks the discharge diminishes. In five or six weeks the drainage tube is taken out. The cicatricial tissue quickly contracts, and the patient requires no dressing. From the fact that there is rarely any immediate urgency in cholecystotomy, that the secondary incision requires the minimum exposure of the peritoneal cavity, and is completed in a few minutes, this double operation is advised in all cases of cholelithiasis and inflammation, except in cicatricial obstruction of the cystic duct, or in case of stone so firmly secured in a diverticulum or in the cystic duct that it cannot be dislodged, when cholecystectomy is indicated.

Suture of an Old Patellar Fracture.

Sonnenburg (*Beilag. zum Centralblatt für Chirurg.*, No. 24, 1888) records the case of a patient, who, in 1884, fractured his patella and recovered with

ligamentous union. In 1887 the ligamentous band was torn and the fragments widely separated. As there was no chance for spontaneous union and the quadriceps was somewhat atrophic, Sonnenburg determined upon approximation and suturing of the fragments after v. Bergmann's method. The tuberosity of the tibia was chiselled off to allow the lower fragment to be approximated to the upper; in spite of this, it was very difficult to suture the two fragments closely to each other. The case terminated favorably. Bony union took place, the quadriceps became again functionally active, the patient could extend his leg and flex it to a right angle. Sonnenburg considers this the best method by which widely separated fragments can be approximated, but cautions the surgeon against involving the joint in the separation of the tuberosity.

The Checking of Hemorrhage in Amputations of the Shoulder-joint.

In case of traumatic or inflammatory affections calling for shoulder-joint amputations, W. Koch (*Archiv für klinisch Chirurg.*, xxxvii. Bd., Heft 2) holds that the management of hemorrhage is attended with little difficulty. Bleeding is insignificant, even though circular compression and pressure upon the subclavian be omitted, if the operator proceeds in the ordinary method—*i. e.*, a vertical incision running down from the coracoid process, disarticulation, seizure of the axillary artery by the fingers of an assistant, and completion of the flaps by a circular cut. If the operator prefers, a preliminary ligation of the third part of the axillary may be performed.

In the profound anæmia always attendant upon malignant sarcoma of the arm or shoulder, whether the tumor be ulcerating or not, the loss of a relatively small quantity of blood becomes a very serious matter, and the hemorrhage, even after a preliminary ligation of the axillary or subclavian is extraordinarily profuse.

In these cases Koch advises that the clavicle be divided at the inner border of its outer third and, after a preliminary bandaging of the arm, a strong rubber tube be passed beneath the axilla, around the shoulder and through this break in the continuity of the bone. Before knotting, four loops should be affixed, corresponding to the position of the pectoralis, latissimus dorsi, clavicle and spine of the scapula. The rubber tube is drawn tight and tied, and to prevent it from slipping when the arm is taken away the loops are pulled by two assistants toward the sound side of the body. By this means not only the subclavian but also the vessels which supply the collateral circulation are firmly compressed.

The Treatment of Fractures of the Elbow-joint.

Lauenstein (*Beilag. zum Centralblatt für Chirurg.*, No. 24, 1888) advises for supra-condyloid, condyloid or T-fractures of the lower extremity of the humerus, treatment in the extended position, on the ground that displacement of the condyles cannot be detected when these fractures are treated upon the ordinary right-angled splint, but will, when union is complete, leave the patient with an axis deformity, on extension, corresponding to varus and valgus, as the inner or outer condyle is displaced. Since ankylosis is frequently due to

an over-production of callus, this accident is favored by a position which will not allow the surgeon to determine certainly whether or not the bones are in proper position. Lauenstein has treated all of his cases for the last six years in the extended position, and has had excellent results.

König, while commending the extended position in hospital practice, holds that the angular splint is more practical for private and dispensary patients.

Bardenheuer has for five years treated all elbow fractures with permanent extension, both longitudinal and transverse, and with satisfactory results.

Wagner and Sonnenburg, while admitttng the value of this method, claim that some cases do better when treated in the right-angled position.

Massage Treatment of Chronic Leg Ulcers.

Appenrodt (*Deutsch. medicin. Wochenschr.*) commends massage as a means of treating chronic, indurated, eczematous leg ulcers which have resisted all other treatment, claiming the rapid appearance of healthy granulations and prompt cicatrization as the certain sequence of perseverance in this method.

The ulcer and the entire limb must first be thoroughly disinfected by a course of antiseptic dressings and washings, lasting for several days; otherwise septic matter may be forced along the lymphatic channels and multiple abscesses complicate the case.

Light effleurage is first employed carefully, avoiding strong pressure. Lanolin is used as the inunction. After massage, the limb is again thoroughly washed with soap and disinfected; all raw surfaces are dressed with mull spread with lanolin, covered with tissue paper, and a roller bandage applied over the whole.

DERMATOLOGY.

UNDER THE CHARGE OF

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AND

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Pemphigus Pruriginosus—Cure by Carbolic Acid.

The notes of a case of pemphigus pruriginosus treated successfully by applications of carbolized water are given (*Revue Médicale*, No. 4, 1888) by Secretan. The patient, an adult male, exhibited upon all parts variously sized blebs in the several stages of development. The lesions covered, in all, more than half the surface. The eruption appeared in outbreaks, accompanied by elevation of temperature. As soon as one crop had about disappeared, a recurrence would take place. The patient was greatly enfeebled, both by the direct draining effect of the disease, as well as by the intense

and persistent itching. The ordinary therapeutic methods were tried in vain, and, finally, as a palliative to the pruritus, compresses wet with carbolized water (one per cent.) were applied, with almost instant relief to the itching, and with gradual improvement in all the cutaneous symptoms. The new blebs were abortive, and in four or five weeks after these applications had been ordered, the patient was discharged from the hospital cured. In the beginning of this treatment, especially when there were numerous excoriations, it was necessary to discontinue the applications, for hours or days, by reason of evidences of toxic influence. In all, the case was under treatment, from admission to discharge, from the middle of January to the last of March. The disease had made its appearance early in the preceding December. The author suggests that the therapeutic result of the carbolic acid applications agrees with the microbe theory of the disease advanced by Gibier.

Pemphigoid Eruption, with Changes in the Peripheral Nerves.

Sangster and Mott read before the Royal Medical and Chirurgical Society (*British Medical Journal*, June 16, 1888) the notes of a case of pemphigoid eruption, with rapidly fatal termination. The patient, aged seventy-eight, when admitted to the hospital, was, to a large extent, covered with a bullous eruption of fairly symmetrical distribution and was, moreover, as to general condition, exceedingly prostrated, with an elevated temperature. The patient was evidently suffering from renal disease, as the urine was scanty and loaded with albumen. Nineteen days after admission, death ensued, being preceded in the last three days by uræmic symptoms. A microscopical examination of hardened sections of the cutaneous nerve and also of the spinal ganglia and posterior roots showed a parenchymatous degeneration of the nerve fibres. [The duration of the disease before admission is not stated.—Eds.]

Recurrent Herpes zoster Femoralis.

A case of a tropho-neurotic eruption recurring at intervals is reported (*Monatshefte für praktische Dermatologie*, No. 11, 1888) by Düring. The first outbreak had been preceded three months previously by a severe septic phlegmonitis of the left thigh. Following this phlegmonitis, and before the peculiar herpetic eruption manifested itself, there had been in the same region, at intervals of weeks, an erysipelatous-like inflammation; redness and swelling constituting the local symptoms. These attacks were of brief duration, and excepting the first, unaccompanied by any constitutional disturbance. Later the eruption assumed a distinctly herpetic character and corresponded to the course and distribution of the anterior branch of the external cutaneous nerve. Each of these herpetic attacks lasted about six weeks, an outbreak being preceded, for several days, by general symptoms of malaise and elevation of temperature. Several weeks or months would intervene between these herpetic outbreaks. Sea bathing appeared to have an influence in delaying a recurrence. An attack of typhoid fever, also, gave several months' relief from the eruption. In the past year, the patient has also suffered from attacks of herpes præputialis, and these seemed to be, in a sense,

vicarious, as the intervals between the recurrences on the thigh were, during this period, much longer. The patient came under observation in 1881 and up to the present time is still a subject of these attacks.

On the Treatment of Lupus.

As an auxiliary to the ordinary methods of treating lupus, or as an independent method, Unna advises (*Monatshefte für praktische Dermatologie*, No. 4, 1888) the following lotion: ℞. Corrosive sublimate, 1; carbolic acid or creasote, 4; alcohol, 20. The nodules are attacked in series of tens, beginning with those at the edge of the patch. They are first punctured with an acne lance, and a minute shred of absorbent cotton moistened with the lotion is inserted by means of a sharpened stick; the cotton rotated and allowed to remain for ten or fifteen minutes. In a few days the punctures and lupus deposits so treated have almost disappeared, and other nodules may be then similarly attacked. This method, the writer believes, has many advantages over the somewhat similar plan of treatment by means of the nitrate of silver stick.

On the Treatment of Sebaceous Tumors.

T. Murray Robertson states (*British Medical Journal*, June 2, 1888) that in consequence of the objection of many persons with congenital sebaceous tumors and "wens" to the ordinary surgical methods of removal, he has adopted in such cases the following simple plan with marked success: The cyst is punctured with a Gräfe cataract knife and the contents gently expressed, and then a very small piece of silver nitrate introduced. The following day the capsule of the cyst may be readily removed by means of a pair of forceps, coming away "like the shell of a bean," without any part being left adherent. No ill effects have been noted, and a regrowth has not been observed.

Urticaria Pigmentosa.

In the case reported by Elsenberg (*Vierteljahresschrift für Dermatologie und Syphilis*, Heft 3, 1888) the disease began when the child was six weeks old, and to the time of this report, two years subsequently, it was still persistent. The lesions at first were of the well-known rosy tinge, but soon showed a brownish coloration. The older efflorescences were of a decided olive hue, and the skin, which had been the seat of recurring wheals, was more or less darkly pigmented. The itching, somewhat variable as to degree, was the most annoying symptom. The child was healthy and in spite of the disease remained well-nourished. There was nothing in the family history to throw light upon the case. From time to time the tongue was the seat of whitish, rounded, sharply defined plaques, from which the epithelium exfoliated, leaving red excoriations. Arsenic and sodium salicylate were each perseveringly prescribed, but with negative effect. In the last month in which the child was under observation atropia was given and with considerable benefit. Externally, warm baths, salicylic acid and carbolic acid ointments afforded some relief to the itching.

Post-vaccinal Eruption.

Behrend reports briefly (*Berliner klinische Wochenschrift*, No. 26, 1888) an eruption, more or less general, following vaccination, in a child eight months old. The lesions, which at first were distinctly papular, changed to urticaria-like spots, and around many appeared a vesicular wall. In places, the eruption became confluent, forming solid sheets, which near the flexures, especially about the genitalia and the anal region, became superficially eroded. In fact, when fully developed, the eruption presented phases of several affections—urticaria, erythema multiforme and herpes iris. The writer again calls attention to a fact to which he had referred several years previously: that in vaccinal eruptions there seem to be two periods for their occurrence—either in the first three days or not until the eighth or ninth day. In the present case the eruption appeared on the eighth day.

Transplantation of Carcinomatous Skin.

An interesting experiment (*Berliner klinische Wochenschrift*, No. 21, 1888) regarding the effect of transplantation of carcinomatous skin has been made by Hahn. The patient, who had some time previously been operated upon for mammary carcinoma, applied for relief for severe pain and the reappearing carcinomatous deposits. In the neighborhood of the scar had appeared a hard, diffused infiltration and here and there numerous scattered nodules. By reason of the great extent involved and the debilitated condition of the patient, another radical operation was inadvisable, and the experiment was made of excising, in a few places, portions of the affected skin, replacing it by healthy integument from the adjacent parts, and recovering these latter bare places with the excised portions of the carcinomatous skin. The parts healed, but the healthy tissue surrounding the transplanted skin, as a result, became involved in the carcinomatous process.

Acute Circumscribed Œdema of the Skin.

Several cases are reported (*Wiener medicinische Presse*, Nos. 11, 12 and 13, 1888) by Riehl. An analysis of the various cases permits the symptoms to be roughly grouped as follows: 1. Evanescent œdema of the skin, subcutaneous tissue and mucous membranes. 2. Stomachic, intestinal (and renal?) disturbances. 3. General symptoms, such as depression, somnolence, etc.; and a fourth group might be added, which would include respiratory disturbances. As yet, the cause of these complex symptoms is, as the author remarks, unknown. The arthritic diathesis has been stated (Chaffart) to be responsible; others look upon the different symptoms as due to regional œdema, as, for example, vomiting, as being due to œdema of the walls of the stomach. Others again, including the author, consider it extremely probable that while the various symptoms are directly due to regional œdema, the exciting cause of these peripheral vaso-motor disturbances is to be found in the central nervous system.

Multiple Circumscribed Gangrene of the Skin.

Before the Hamburg Medical Society (*Münchener medicinische Wochenschrift*, No. 21, 1888) Arning exhibited a girl of fifteen years, who, since

eight days previously, had been affected with a peculiar eruption of a gangrenous type. On the face, right shoulder, right thigh and left forearm were to be seen small, sharply defined, gangrenous patches, superficial in character. They had their beginning, as the patient stated, as wheals. The general health, up to the time of the attack, had been excellent. In the discussion, Curschmann remarked that, in the main, there seemed to be three forms of gangrene of the skin—embolic, tropho-neurotic and cachectic. Occasionally, however, exceptions occurred, in which the disease could not be placed in any of these groups.

The Etiology of So-called "Herpes Areolaris Mammæ."

The condition described under this name, as Stumpf remarks (*Münchener medicinische Wochenschrift*, No. 25, 1888), does not partake so much of the nature of herpes as of that of eczema. Both breasts are affected and the disease involves the whole areolar region, being sharply defined at the border Gelatin culture was made with portions of the crust, and gave, as a result, a growth of fungus—a staphylococcus—morphologically the same as the staphylococcus pyogenes aureus. The fungus was also found in the milk of those affected. This latter fact, the writer considers, explains the rebelliousness of the disease, reinfection constantly taking place from the oozing milk. The belief is stated, however, that the disease has its starting-point in the areolar region, and subsequently the staphylococcus gains access to the milk channels.

In the discussion that followed several weak points in the paper were pointed out; it seemed improbable, if the cause was to be found in the staphylococcus, that the disease would stop so abruptly at the margin of the areolar region; and improbable, also, that if the disease was kept up by reinfection from the milk, for the upper part of the areolar region to be so completely affected as the lower half.

Post-eczematous Furunculosis.

The development of furuncles along with or following eczema is, as Unna states (*Monatshefte für praktische Dermatologie*, No. 3, 1888), not uncommon, and the longer the eczema has lasted and the less antiseptic remedies have been employed, the greater the probability of furuncular lesions. To mitigate and to avoid this complication the incorporation of carbolic acid or thymol in the ointments used for the eczema is advised. The addition of a minute quantity of corrosive sublimate to oxide of zinc ointment, aided by the administration of calcium sulphide, may be considered, however, the most certain method to adopt in cases in which boil formation is likely to occur.

Treatment of Eczema.

In simple eczema affecting the fingers and hands, Wetherell has had (*Lancet*, June 2, 1888), in a number of instances, good results from the following simple plan of treatment: The fingers and parts affected are at night individually enveloped with pieces of lint previously dipped in liquor carbonis

detergens (an alcoholic solution of coal-tar) and over this is bound gutta-percha tissue. The smarting, which is felt when the dressing is first applied, soon disappears. On removal of the lint in the morning the skin looks sodden; a small quantity of lanolin is then rubbed in, in order that the parts may be rendered soft and more pliable. The hands may be left exposed during the day, but the effect is better if they are kept gloved. Every third day the parts are washed with lanolin coal-tar soap. If a few small blisters be present, they may be touched with carbolic acid. In the event of the pure solution of coal-tar being too strong in cases in which there are considerable heat and redness, it may be diluted with from one to ten parts of water. With suitable dietetic management and the use of internal remedies to meet general indications, this method has, the author states, often proved of value.

OBSTETRICS.

UNDER THE CHARGE OF

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The Treatment of the Vomiting of Pregnancy.

Hennig (*Münchener med. Wochenschrift*, No. 28, 1888) regards the milder form of vomiting of pregnancy as due to a wound, inflammation or dislocation of the uterus; a distended bladder or rectum may also cause it. The treatment is the removal of the cause.

The more severe form is sympathetic, and a neurosis. Nux vomica and cocoa essence, or cocaine, are sometimes useful in these cases; dilatation of the cervix he has rarely found successful. The induction of labor he considers the only efficient treatment for severe cases.

Sänger had seen one case in which the vomiting was caused by carcinoma of the stomach; in another, a laceration of the cervix provoked vomiting, which ceased when the laceration was operated upon.

Günther (*Centralblatt für Gynäkologie*, No. 29, 1888) regards the affection as a reflex neurosis, and treated five cases by galvanism, the positive pole being placed against the cervix, the negative between the eighth and twelfth dorsal vertebræ. From two and a half to five milliampères were employed, for seven to ten minutes.

He regards the interruption of the current as the most potent cause of abortion following electrical treatment, and therefore takes especial pains to avoid the accident. His results were good.

Tubal Pregnancy, with Extirpation of the Fœtal Sac.

Doléris (*Bulletins de la Société Obstétricale*, No. 6, 1888) presented, at a recent meeting of the Obstetrical Society of Paris, the fimbriated extremity

of the left Fallopian tube, with a five months fœtus, which he had removed, with fatal result.

Rupture had just occurred when the operation was performed. The removal of the sac left a large cavity in the pelvis, the intestines being confined by adhesions; three large bleeding surfaces remained for treatment. The patient died of shock.

CHAMPIONNIÈRE did not believe in extirpating the sac in these cases. He had operated twice successfully by laparotomy, removal of the fœtus and draining the sac. It is in exceptionally simple cases that the sac can be extirpated.

EXTRAUTERINE PREGNANCY SIMULATING OVARIAN TUMOR.

ROSTHORN (*Wiener med. Presse*, No. 24, 1888) reports the case of a patient who presented an ovoid tumor at the right cornu of the uterus, which was thought to be an ovarian cyst. The tumor was removed; a portion of its substance extended into the uterine tissue. The patient made a prompt recovery. Dissection showed the tumor to be an extrauterine pregnancy.

Rosthorn divides these cases into tubal, ovarian and abdominal, and pregnancy in the uterine cornua. He recognizes the difficulties which attend the diagnosis in these cases, and believes that in exceptional women the epithelia of the abdominal cavity possess the property of developing a placenta and nourishing an ovum; this is known to occur in some animals.

The only method of treatment which offers a reasonable promise of cure he believes to be laparotomy, no matter at what stage of pregnancy undertaken.

AXIS-TRACTION FORCEPS AMONG GERMAN OBSTETRICIANS.

An interesting discussion, showing the views of German obstetricians regarding the use of axis-traction forceps, was opened at the recent meeting of the German Society for Gynecology (*Münchener med. Wochenschrift*, No. 25, 1888), by BUMM, of Würzburg, who stated his satisfaction with Tarnier's forceps.

He had found the weight of the instrument an advantage, and had rarely used the compressing screw, but allowed the head to mould itself and rotate freely as extraction proceeded. He applied them as he did ordinary forceps.

SÄNGER thought the broad handle of these forceps a great aid to easy traction.

DÜHRSSEN, with the Gusserow school of obstetricians, did not approve of axis-traction, but adopted Hofmeier's suggestion, to press the head into the pelvis externally and apply short forceps.

WINCKEL preferred Breus' forceps, as lighter than Tarnier's.

[The Breus forceps is longer than the ordinary forceps, with more pronounced pelvic curve, and has a light traction rod, detachable, smoothly fitted at the posterior extremity of the cephalic curve; it is commonly used in Vienna for axis-traction.—ED.]

THE TREATMENT OF ABORTION AND PREMATURE BIRTH.

WINCKEL (*Münchener med. Wochenschrift*, July 10, 1888) concludes that in the greater number of cases of abortion and premature labor the removal

of the ovum is best accomplished by nature: fever, profuse hemorrhage and suppuration are the indications for prompt removal of the ovum. The best method of removal is by the hand, expression and enucleation of the ovum, after the uterus has been thoroughly disinfected by boric acid or creolin.

The curette should only be used when small portions of the membranes remain adherent, and cannot be removed by the hand. Retained decidua does not require the use of the curette. When suppuration occurs after the removal of the greater portion of the ovum, the remaining fragments are most safely removed by repeated antiseptic intra-uterine injections.

The Bacterial Contents of the Lochia.

Ott (*Archiv für Gynäkologie*, Band 32, Heft 3, 1888) has examined the contents of the uterus and vagina for bacteria, and found that in a healthy puerpera the uterus and upper portion of the vagina contain no germs. He concludes that the lochia of healthy women are innocuous. His method was different from those of Döderlein and Winter, with the former of whom his results agree.

The Spread of Puerperal Disease by Indirect Infection.

Fehling (*Archiv für Gynäkologie*, Band 32, Heft 3, 1888) regards direct infection, since the hands and instruments of obstetricians are disinfected, as infrequent. He believes that pathogenic germs often obtain access from infected linen and furniture, and from the atmosphere. He cites a case in his own experience in which erysipelas and puerperal sepsis followed the bursting of a drain which infected the air of a ward. He considers primary infection to be that conveyed by direct contact of pathogenic germs from without. Secondary infection is produced by the absorption of ptomaines produced by germs which have entered the genital canal before or after labor.

Practical Disinfection of the Female Genitals.

Steffeck has made experiments upon various methods of disinfecting the cervix and vagina, and concludes that, practically, thorough disinfection cannot be obtained by one application of any agent, but by repeated use.

Irrigation of the vagina and cervix with a quart of bichloride of mercury solution 1 to 3000, or carbolic acid 3 per cent., must be followed by irrigation of the vagina at intervals of two hours with the same antiseptic to reduce the possibility of auto-infection to a minimum.—*Centralblatt für Gynäkologie*, No. 28, 1888.

Acetic Acid as an Antiseptic in Obstetrics.

Engelmann (*Centralblatt für Gynäkologie*, No. 27, 1888) reports his results in the use of acetic acid as an obstetrical antiseptic, as follows: It is as efficient as carbolic acid, less harmful, and penetrates the tissues more deeply than bichloride of mercury or carbolic acid. Metallic instruments may remain in a three per cent. solution fifteen minutes without injury. Its use upon the hands is not disagreeable. Engelmann has employed it in three

per cent. solution for ordinary purposes, and five per cent. where a stronger agent was needed, in various obstetric cases with good results. A five per cent. solution is slightly irritating.

The Etiology of Eclampsia and Albuminuria.

Santos (*Archiv für Gynäkologie*, Band 32, Heft 3) records fifty-three cases of eclampsia in the Buda-Pesth clinic, and concludes from his study of the subject that albuminuria in pregnancy is the result of a reflex irritation of the sympathetic and renal nerves caused by the increasing distention of the uterus, and the irritation of the uterine nerves by this distention and subsequent contraction. It is physiological in pregnancy, and a diagnostic symptom of pregnancy. This conception accounts for the more frequent occurrence of albuminuria in young women, in whom reflexes are most easily excited. Any condition heightening the general reflexes favors albuminuria.

Santos regards eclampsia as an "acute peripheral epilepsy," whose genetic zone is the uterus. Upon this basis he readily explains the action of narcotics, and rare cases in which eclampsia occurs without albuminuria.

Pyæmia after Abortion, following Latent Infection with Erysipelas.

Döderlein, at the German Society for Gynecology (*Münchener med. Wochenschrift*, No. 25, 1888), reported a case of instrumental abortion for obstinate hemorrhage, which was followed by fever and death.

Post-mortem examination revealed no gross lesions of the genitals, or the lymphatics communicating with them. Bacteriological examination of the contents of the uterus showed streptococci present; they were also found in one knee and middle finger and in pus at the base of the skull. Purulent meningitis was the cause of death; there was no peritonitis.

The patient had suffered from erysipelas a year previously, and the source of infection in the present instance was the cervical lymphatics, which were softened in the centre and contained streptococci; this latent infection had been made active by abortion.

Döderlein stated that puerperal sepsis arose from infection of the uterine cavity, or from specific infection of the lesions occurring at labor. Micrococci introduced into the vulva by unclean coitus, masturbation or intestinal disease, may also infect the cavity of the uterus.

It is evident that we cannot discuss clearly the question of auto-infection until we have disinfected the vulva and vagina in cases under observation.

The Influence of Bacteria upon the Digestion of Children.

Baginsky, in a paper before the Berlin Medical Society (*Berliner klinische Wochenschrift*, No. 26, 1888), states that the bacterium of the lactic fermentation causes the production of acetic acid and acetone, as well as lactic acid. This formation goes on without oxygen and is not hindered by the bile. The neutral lactates are changed to butyric acid; starch is not changed to

sugar, nor is casein or albumin decomposed. The gases formed when acetic acid is produced are carbonic acid, hydrogen and methane.

He proposes to style this bacterium the acetic bacterium. He further found that this bacterium is destroyed by acetic acid. In examining the stools of children suffering from *cholera infantum* he isolated a bacterium which produced green stools (the germ of Hayem and Lesage) and also a bacterium growing in white colonies. Both of these liquefy gelatine and both are inhibited in their development by the acetic bacterium; this germ has the property of preventing the growth of pathogenic germs in the intestine.

Baginsky considers that only the primary manifestations of *cholera infantum* are caused by bacteria, and that the secondary, severer phases result from the extensive anatomical lesions in the intestine which have occurred. It is evident that the treatment of a given case will depend upon the stage of the disease. He found calomel, boric acid and resorcin prevent the growth of the acetic bacteria; naphthaline and iodoform are inert. If the case is seen early, when acetic fermentation is excessive, these remedies and the withdrawal of milk are indicated. If pathogenic bacteria have accumulated in the stomach or intestines, irrigation with antiseptic fluids is advised. Each case must be studied separately, and interference with the conservative processes, as shown in the inhibitory action of certain bacteria, should only be undertaken intelligently.

GYNECOLOGY.

UNDER THE CHARGE OF

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The Etiology of Vulvo-vaginitis in Children.

Pott (*Archiv für Gynäkologie*, Bd. xxxii. Heft 3) has had ninety-six cases of vulvo-vaginitis in children, more than one-half of whom were under five years of age. He attributes it to direct specific infection, or some general dyscrasia, as syphilis or tuberculosis. Epidemics occurred from the infection of several children in the same family, through the medium of soiled linen, sponges, etc. Cases of direct communication of the virus are rare, the writer having observed only three. The entrance of *oxyures vermiculares* into the vagina was supposed to be a common source of vaginitis, but he found that gonorrhœa was more often the true cause, in fact, he seldom failed to find gonococci.

In discussing the above paper, Prochownick stated that he had found the cocci in seventeen out of twenty-one cases of vulvo-vaginitis in children. All these patients suffered from severe urethritis.

Sänger said that he had seen epidemics of vaginitis in families. In one instance a girl three and one-half years old developed intense peritonitis in

consequence of gonorrhœal infection; he believed that cases of pyosalpinx and old localized peritonitis in young virgins might possibly be referred to gonorrhœa contracted in childhood.

Melanotic Tumors of the Female Genitals.

Haeckel (*Archiv für Gynäkologie*, Bd. xxxii. Heft 3) reports a case of melanotic growth, involving the external genitals, with secondary involvement of the inguinal glands. The entire mass was extirpated and the patient made a good recovery, but died five months later from metastases in the abdominal viscera. Microscopically the growth was a melano-sarcoma. According to the writer, only ten similar cases were recorded. Melanomata of the internal genitals were still more rare, only two authentic cases of primary disease of this character being on record. Such tumors never developed primarily in the ovaries. When found in the vagina they were secondary to disease of the external genitals. The majority of these pigment-tumors were sarcomata. They gave rise to very few symptoms, pain, ulceration and hemorrhage being rare. They grew rapidly, soon involved the neighboring lymphatic glands and tended to undergo retrograde changes and to form metastases in distant organs.

The diagnosis was made by their color, which was characteristic; they might rarely be confounded with ordinary sarcomata into which hemorrhages had taken place.

The prognosis was absolutely unfavorable, most of the patients operated upon dying from metastases in a few months; only two cases had been reported in which there was no recurrence after operation. Still, operative interference was justifiable, in order to relieve pain and hemorrhage, even when it was impossible to remove all the disease. If the inguinal glands were affected, they should be extirpated like the axillary glands in amputation of the carcinomatous breast; it was also desirable to remove all the masses of fat lying between the tumor and the affected glands, in the hope of excising also the diseased lymphatics which run in them.

Simple and Malignant Adenoma of the Uterus.

Ruge (*Id.*) describes clearly the microscopical differences between the two forms of adenoma, in a paper read at the recent meeting of the German Gynecological Society. The benign form is characterized by simple hypertrophy and hyperplasia of the glands. The mucous is no longer sharply separated from the muscular layer; the interstitial tissue undergoes marked changes, the cells increasing in size, so as to resemble those of the decidua, while their nuclei become more numerous. Diffuse and circumscribed adenoma is simply hyperplastic glandular endometritis. If small submucous fibrous polypi undergo a similar change by a development of the glands in the mucous membrane covering them, they must also be classed with adenomata, and are to be regarded with some suspicion; in fact, the uterus has often been extirpated on account of the uncontrollable hemorrhage to which they gave rise.

In malignant adenoma, in addition to the glandular hyperplasia, there are changes in the entire uterine tissue, while metastases occur in other organs; in short, the condition is "clinically and anatomically true cancer." The

solid cell-processes invade the deeper parts to a greater extent than is common in cancer. Extreme glandular hyperplasia is the characteristic mark of malignant adenoma. In general, the microscopical diagnosis of affections of the endometrium present unusual difficulties.

Carcinoma Uteri Associated with Fibromyoma.

Löhlein (*Centralblatt für Gynäkologie*, July 29, 1888) presented, at a recent meeting of the Berlin Obstetrical Society, a uterus removed *per vaginam* on account of carcinoma of the body of the uterus. Aside from the ordinary symptoms, the patient had complained of periodical attacks of pain, which began at ten o'clock every morning, reached their maximum severity at noon and disappeared at four o'clock in the afternoon. Simpson had originally called attention to this phenomenon. The operation was so difficult that the idea was entertained of resorting to supra-vaginal amputation. Löhlein stated that it was now known that the association of carcinoma and fibroma was not so rare as was formerly supposed. He had noted it in two out of seven cases.

Chloride of Zinc as an Escharotic in Carcinoma of the Cervix.

Ehlers (*Id.*), at the same meeting, reported several cases in which he had used this agent in accordance with Van de Warker's suggestion. He had made microscopical examinations of portions of the growth in each instance in order to discover how deeply the caustic had penetrated. He had found it somewhat unmanageable, since it often destroyed the healthy tissue more than that which was diseased; it had, in his opinion, no specific action.

In the discussion which followed Olshausen said that he disliked to apply chloride of zinc to the uterine mucous membrane, because of its tendency to form extensive cicatrices; he preferred tincture of iodine, which had the property of checking hemorrhage and diminishing the secretion.

Bröse stated that he had treated a large number of cases with the chloride without having noticed resulting stenosis in a single instance.

Rheinstädter's experience had been similar. He thought that the chloride only destroyed the superficial layers of the mucous membrane, which were reproduced without cicatrization, as after the use of the sharp curette.

Löhlein said that he had used this agent in certain inoperable cases of carcinoma, and had not found, as Van de Warker had stated, that the prolonged contact of a concentrated aqueous solution of the chloride with the diseased tissues led to the formation of a line of demarcation between these and the healthy portion of the cervix. He had observed no bad results after its use; the wound granulated well, and in two instances firm cicatrices were formed. It presented no advantages over other caustics.

Vowinckel said that he was accustomed to use chloride of zinc paste, according to the method practised in Czerny's clinic, viz.: Four parts of chloride of zinc, three parts of flour and one part of oxide of zinc were made into a paste with water, and this was enclosed in a piece of gauze, to which was attached a thread. After the diseased tissue had been thoroughly scraped away with a sharp spoon, and the hemorrhage was checked, this tampon was applied to the raw surface, the vagina being protected by a coating of vaseline.

After remaining *in situ* for about six hours (or for a less period if there was danger of perforating the recto- or vesico-vaginal septum), the caustic was removed and the vagina was tamponed with iodoform gauze. In this way the action of the zinc was confined to the diseased tissue, hemorrhage did not occur and the pain was not excessive.

MARTIN'S experience with Canquoin's paste had often been favorable, but he had been led to abandon it because of cases in which severe hemorrhage and perforation into the bladder, rectum and peritoneal cavity resulted from its prolonged contact with the tissues.

CASTRATION IN CASES OF OSTEOMALACIA.

FEHLING (*Archiv für Gynäkologie*, Bd. xxxii. Heft 3), from a study of many cases of this affection and an analysis of the results of operative interference during labor, has arrived at the conclusion that removal of the ovaries offers a cure. All the patients with osteomalacia who have recovered after Porro's operation (twenty-four) were cured of the osseous affection, so that they were able to walk about again and to work. The writer himself has had four cures. This leads him to believe that the disease may be arrested before the patient is allowed to become pregnant, by inducing the premature menopause. He has performed oöphorectomy with this object in three cases; the first was entirely successful, in the second there was speedy improvement, but after a few months the softening of the bones recurred, although pain was absent; in the third a sufficient length of time has not elapsed since the operation to permit any positive statements with regard to the result, although the patient was able to walk about soon after the operation. In every case the ovaries were small, though not atrophied, while there were large varicosities in the broad ligaments.

INTESTINAL OBSTRUCTION AFTER LAPAROTOMY.

NIEBERDING (*Id.*) reports three cases of obstruction, in one of which a loop of intestine escaped through a hole in the mesentery and was nipped. In the two others the gut became adherent to the wound; the abdomen was reopened in both instances, but the patients succumbed from peritonitis. He had cleansed the peritoneal cavity with dry sublimated gauze, and wondered if this had acted as an irritant.

KALTENBACH replied that he had frequently observed similar adhesions of the gut, and attributed them to two causes, the use of too concentrated antiseptic solutions, and imperfect disinfection of the peritoneal cavity after septic material had entered it.

PLEURISY AS A COMPLICATION OF OVARIAN CYST.

DEMONS, at a meeting of the Paris Société de Chirurgie (*Annales de Gynécologie et d'Obstétrique*, June, 1888), called attention to the frequent association of pleurisy with ovarian cyst, which he had observed in nine out of fifty cases. Pleuritic effusions may be unilateral or bilateral, and may even be on the opposite side to the tumor. Although they usually accompany large cysts, in some instances the latter may be small; if a patient, having a

tumor not sufficiently large to interfere with respiration, is attacked with dyspnœa, pleurisy should be suspected. It is important to note the incorrectness of the general view that pleural exudations always indicate the presence of malignant disease of the ovaries, with secondary affection of the pleura. The adoption of this theory would lead surgeons to refrain from operating upon patients with simple ovarian tumors. The effusion may be due to an obstruction of the lymphatics of the pleura, following a similar obstruction of those of the abdomen from the pressure of the tumor.

In the discussion which followed, TERRIER stated that he had observed the association of pleurisy and ovarian cyst, and generally attributed the former to secondary cancerous disease, even when the cyst was apparently non-malignant; nevertheless, operative interference in these cases was not contraindicated, because, if the pleuritic effusion was due simply to pressure it would disappear after removal of the cyst, but if it was of cancerous origin the patient had nothing to lose from the operation. He always punctured the pleural cavity before performing laparotomy, when there was extreme dyspnœa, and had never regretted having done so.

BOUILLY believed that the complication was rare, having noted it only twice in twenty-five or thirty cases. There was no reason why effusions should not accompany simple, as well as malignant cysts, although the prognosis was different in the two cases.

CHAMPIONNIÉRE thought that pleural effusion, or, more properly, hydrothorax, was most frequently associated with proliferous cysts, with or without resulting ascites; the prognosis was always grave. An examination of the urine would show that the daily amount, as well as the quantity of urea, was considerably diminished.

TERRILLON had discovered a pleuritic effusion in only three out of one hundred and twenty cases of ovarian cyst, although he always examined the thorax carefully. He recognized two forms of effusion, the simple variety accompanying benignant tumors, in which absorption readily occurred, and that associated with cancerous or proliferous cysts, in which there was probably secondary disease of the pleura.

VERNEUIL said that any abdominal tumor, whether connected with one of the pelvic or abdominal viscera, might be complicated with pleural effusions. Potain had shown that a similar effusion might result from congestion of the ovaries and peri-ovarian tissues, from reflex irritation and hyperæmia; it might be on the same side as the affected ovary, or on the opposite side.

PUBLIC HEALTH.

UNDER THE CHARGE OF

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VACCINATION STATISTICS IN GERMANY FOR 1883.

There were in Germany, in the year 1883, 1,367,569 children who had attained the age when vaccination was obligatory, but of these, 139,611, or

10.21 per cent., remained unvaccinated, 99,496 of them being, as stated by certificates from medical men, unfit for vaccination. Of those who were vaccinated, in 1,190,163 cases, or 87.03 per cent., the result was successful, in 32,230 it was unsuccessful, and of 5517 nothing is known, as they did not return for examination. With regard to the localities in which the greatest proportion of children were vaccinated, Swabia may be considered to rank highest with 97.17 per cent., and Bremen the lowest with only 70.63 per cent. Of the total number in Germany, 108,182 were vaccinated with humanized lymph and 145,526 with animal lymph; in addition to these were 12,989 children, with whom it is not stated what kind of lymph was used. The total number of children who were revaccinated was 930,732, leaving unprotected by revaccination 38,086 children; of those who were revaccinated, in 820,336 cases the vaccination was successful; the best results, viz., 97.33 per cent., were obtained in Schaumburg-Lippe and in Lower Bavaria, where the results were 96.14 per cent. The majority of those children who were unsuccessfully vaccinated were revaccinated in the following year, and thus the number remaining not revaccinated is very small. There were 831,072 revaccinations performed with humanized lymph, and 96,404 with animal lymph.

Extracts from reports of the various provinces give information concerning the period of the year when vaccinations are performed, the kind of place used for the purpose, the method of the operation, and the number of vesicles required by the different governments. Generally, from May to September most of the vaccinations take place, and but few towns have special accommodation, public buildings, town halls, schools, gymnasia, etc., being used as vaccination stations. In some provinces it was considered desirable that vaccinations should be postponed, owing to the prevalence of one kind of epidemic disease or another; in other provinces no postponement was made. Specially appointed medical men perform vaccination in most of the provinces, the methods employed in the operation varying in almost every province. To obtain lymph for the general vaccinations persons are vaccinated before the customary period with lymph obtained from government institutions, from some of which only humanized, from others animal lymph is sent, sometimes mixed with glycerin and sometimes as a dried powder; where animal lymph was much used, as in Hesse and Baden, the insertion success was from 96 to 100 per cent., and there a paste of lymph and glycerin was used.

In Wurtemberg there were 30 cases of original cowpox, from 10 of which inoculations in man were successfully performed, and from one case an animal was inoculated. The opposition to vaccination had not increased in the course of the year, and occurred in many cases more from neglect and ignorance than from any intentional desire to prevent the children being vaccinated. As regards the cases of illness and death occurring after vaccination, there were some of the former from inflammation and glandular enlargement, but none was fatal; erysipelas caused 11 deaths, blood-poisoning 2, in Prussia and in Posen; and some instances of skin eruptions are mentioned, but not one case was observed of syphilis having been transmitted by vaccination. One child appears to have thrust its head against a lancet when already charged, a vesicle forming on the place of the

wound; and a girl of twelve years old, when revaccinated, fainted.—*Arbeiten aus dem Kaiserlichen Gesundheitsamte*, Band II., Hefte 1 and 2.

The Upper Silesian Zinc Industry, and its Influence on the Health of the Workers.

The zinc smelters in Silesia are mostly taken from amongst the Sclavs, who, according to Dr. Tracinski, are of middle height, with ill-developed physique and of phlegmatic temperament, almost approaching indolence. Their mode of living, until the last few years, was most miserable; they subsisted on vegetables and bread, living in huts with all kinds of animals, from early life compelled to assist their parents in the hardest labor, exposed to privations of all sorts and mostly devoted to alcoholic excess. In this way they became a prey to the various diseases consequent on their occupation, and rarely attained to old age; but of late years great progress has been made with regard to their dwelling and food arrangements; they chiefly inhabit two-storied houses, which they obtain at moderate cost, or they are permitted to buy plots of land on which they build their own houses. The wages have increased, so that they are enabled to live on meat and bread instead of vegetables, and they clothe themselves more warmly in winter than formerly, thus guarding themselves against chills. In some factories, arrangements are made for workmen's baths and in most of the smelting villages there is one sick club, if not more, which secures for the workman, if he pays regularly, free medical attendance and medicine, and, if necessary, removal to a hospital, besides an allowance during his illness. If alcohol could be forbidden in zinc works as in mines, there would soon be a still greater improvement in the health of the workmen; but the nature of their employment brings in course of years fatal diseases to all who are engaged in smelting works. The dust which is inhaled and the irritation of the sulphurous gas induce obstinate catarrh of the air-passages which leads finally to emphysema of the lungs. The disturbance of the circulation causes a failure in the oxidation of the blood, and, besides, the dust and metallic substances such as lead, sulphur, cadmium and sometimes arsenic and zinc, which are swallowed, cause diseases of the mucous membrane, disturb the digestion and produce catarrh of the stomach. By degrees, the whole constitution begins to suffer, the muscles dwindle away, the skin loses its color and becomes ashen and pallid, the eyes are sunken, the body is bent, the walk slow and dragging, either in consequence of repeated attacks of rheumatism, or that through disease of the muscles caused by lead. Thus it may be reckoned the age at which a zinc smelter ceases to be capable of work is forty-five years.

Efforts should be directed toward procuring for workmen good drinking water, opportunity for washing and bathing, and, when possible, the introduction of Siemen's stoves and suitable receivers, so as to shut off the smoke from the smelting houses.—*Deutsche Vierteljahrsschrift für öffentliche Gesundheitspflege*, Band 20, Heft 1, 1888.

Lead-poisoning.

In 1887, upward of a hundred persons near Roanne, in France, were attacked with colic of great severity; some suffered from lassitude and general

pains, others from vomiting. It was later discovered that some had well-marked blue lines on their gums, and the water-supply was examined, but as it was derived from several sources, it was eliminated from suspicion. Other articles of food were examined, and especially the flour, when it was ascertained that about sixty people, who were seriously ill, had partaken of flour from a particular mill. A sample of this rye flour was analyzed, and lead was ascertained to be present in it, though to what extent could not be estimated. It was then discovered that the grain at the mill was transported to the millstones by means of an elevator of buckets which were found to consist of tin-plate containing a good deal of lead. The rye flour which passed through these buckets contained not less than five ounces of the metal which had been rubbed off into the grain, and those persons who had eaten rye bread exclusively suffered most severely, while those who used wheaten flour, obtained from another elevator, were not attacked at all. In certain parts, also, a deposit of sulphide of lead was found, owing, probably, to the cracks in the grindstones having been filled with sulphur and which had been brought in contact with the buckets.

Another case of lead poisoning was in March brought before the Paris Société de Chirurgie by M. Duguet. A woman, thirty-eight years old, was employed in a factory to gum small bands of paper on to colored cardboard boxes. In order to pick up the bands she was obliged each time to wet her fingers with her tongue and afterward to wet one side of the band that was colored gray, the other side being colored orange, so as to gum the band on to the box. She frequently gummed as many as five thousand in one day; she stated that her companions, when doing the same work, became pale and thin and suffered from colic, while those who gummed the blue bands did not suffer at all. The bands of paper were analyzed and each was found to contain one-fifth of a grain of lead in its metallic state.—*Sanitary Record*, January and March, 1888, pages 337 and 430.

Outbreak of Febrile Disease.

Dr. Russell, Medical Officer of Health for Glasgow, has published the history and circumstances of a peculiar outbreak of febrile disease during March of this year, in St. Mary's Roman Catholic Industrial School in Glasgow. Children were taken ill with headache, in a few hours became unconscious or maniacal and died; others, after a few hours' illness, suffered from pneumonia and herpes, eventually recovering, while others, again, passed through a pyrexial attack of an ill-defined nature. The school consisted of 207 boys and 194 girls; 66 of the former and 2 of the latter were attacked, the cases being 4 which ended fatally, 31 with severe symptoms recovering and 33 mild cases. In two bodies examined, the most important appearance was that of the intestines, which in each case showed considerable enlargement of solitary follicles and Peyer's patches, together with enlargement of the mesenteric glands.

The food supplies for the boys and girls were received from a common kitchen and could be eliminated from suspicion. There was, however, an amount of intercommunication between the two schools, which in the case of an infectious disease, such as typhus, scarlet fever or smallpox, appearing in

one institution, soon gives practical demonstration of reality. The two girls attacked were both employed in the kitchen, one of them was a sister of one of the boys attacked, and was visited by her mother immediately after she had been with her son in the boys' sick room. As regards the other girl there was no element suggestive of infection excepting employment in the kitchen.

Dr. Russell gives the following summary of his investigation: "The schools are situated in a densely populated district; they are enclosed by surrounding tenements and other large buildings, together with a graveyard which was in 1875 described as "greatly overcrowded with bodies and kept in a state of rank disorder," and in which have since been interred 577 bodies; the free space attached to the schools, and available for exercise, is small; the internal air-space in both is deficient; the inmates are children between five and fifteen years of age, who are weak in constitution, tainted with a proclivity to scrofulous diseases, and generally of low vitality; the death-rate is higher than that of other industrial schools which have received the same class of Glasgow children; the proportion of total deaths from pulmonary diseases is enormous, contagious or infectious disease is nearly always present, and there have been repeated epidemics of typus fever, a certain indication of overcrowding."

The overcrowding is much greater in the boys' school than in the girls', the internal arrangements are more defective, the general sanitary condition of the building is inferior, the general mortality and especially that from pulmonary diseases is considerably higher. Dr. Russell states that he considers the outbreak in March to have been "a febrile disease tending to implication of the lungs and especially to pneumonia; it suggests a specific poison from family resemblance, in explosive character, local limitation, and clinical features, to other well-known typical diseases of the epidemic and infectious class. No specific microörganism was discovered in this outbreak.

The rapid fatality of the fatal cases shows that this poison was the cause of the disease, though in cases in which life was not at once extinguished it tended to expend itself upon the organs of respiration. The local disease was the result of a constitutional infection which was capable of killing without the local disease. The post-mortem appearances pointed to a specific poison allied to that of enteric fever. Such as they were, they were distinctly lesions of the mesenteric gland and of the glandular system of the small intestine. The experience of the Fever Hospital (Glasgow) is strongly suggestive of a causal affinity between certain forms of pneumonia and enteric fever. —(History of a Peculiar Outbreak of Febrile Disease. By J. B. RUSSELL, M.D., Medical Officer of Health for Glasgow.)

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